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Birds of Jasper National Park, Alberta, Canada

Ian McTaggart Cowan

University of British Columbia

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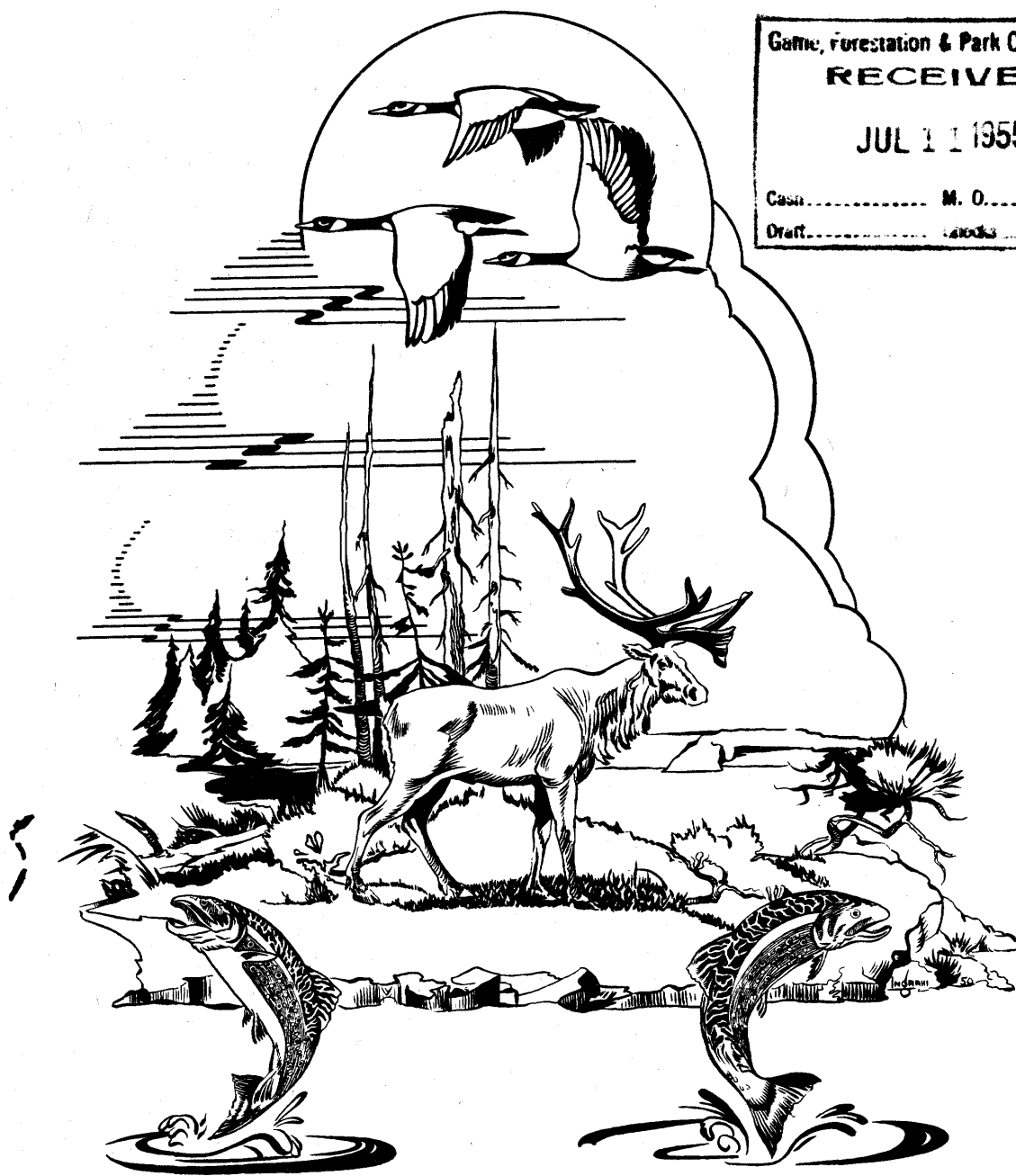
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WILDLIFE MANAGEMENT BULLETIN



Game, Forestation & Park Commission

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DEPARTMENT OF NORTHERN AFFAIRS
AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
CANADIAN WILDLIFE SERVICE

SERIES 2

OTTAWA

NUMBER 8

JUNE 1955

C A N A D A
DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
CANADIAN WILDLIFE SERVICE

BIRDS OF JASPER NATIONAL PARK,
ALBERTA, CANADA

by
Ian McTaggart Cowan

WILDLIFE MANAGEMENT BULLETIN
SERIES 2 NUMBER 8

Issued under the authority of
The Minister of Northern Affairs and National Resources

Ottawa

1955

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Wildlife Management Bulletins are produced to make available to wildlife administrators the information contained in reports which are submitted by officers of the Canadian Wildlife Service.

The reports do not, in most cases, cover extensive studies and are not written primarily for publication. Recommendations arising from the studies are not included.

Introduction

Jasper Park, with an area of approximately 4,200 square miles, is the largest accessible primeval wildlife sanctuary on this continent and as such its bird life is of the greatest interest. The meagre available records of earlier conditions indicate that noteworthy changes in the park's avifauna have taken place in the last 50 years. There can be little doubt that other changes will take place during the years to come. For this reason, then, if for no other, it seems desirable that as complete a record as possible of the current situation be made, for only against it can the significance of future trends be evaluated.

The park area contains a section of the old fur traders' route from Eastern Canada to the Fraser and Columbia Rivers, and was visited by many of the explorers of the American northwest. It is unfortunate that so few of them left any record of the birds and mammals of the region. However, in 1825 Thomas Drummond was sent to the present park region, to make biological collections, as a member of Sir John Franklin's second expedition. His specimens, described by Swainson and Richardson in their "Fauna Boreali-Americana," are the earliest record of Jasper bird life. There are in addition many references to birds in Drummond's own narrative of his trip in the first volume of Hooker's "Botanical Miscellany". Unfortunately, it is seldom possible to tell when he was in the park area, and whether any of his specimens were taken there. Because of this, Drummond's records have been used only where they suggest occurrences not otherwise established.

About the same time as Drummond's visit, or even earlier, some specimens of birds from the Jasper region, taken by servants of the Hudson's Bay Company, reached a Mr. Leadbeater of London, a collector and dealer in natural history specimens. Of these the only ones ever described were two evening grosbeaks, a bohemian waxwing, several dippers, and a yellow rail, all of which eventually reached the hands of Charles Lucien Bonaparte, Prince of Musignano (See Preble, 1908: 61).

After Drummond, the next ornithologist to visit Jasper was J. Alden Loring, who collected for the U. S. Biological Survey in 1895 and 1896. In 1898 notes were made in the region by William Spreadborough, associated with the National Museum of Canada. Examination of them causes one to wonder if the names "Yellowhead Pass" and "Athabasca Pass" are not used interchangeably for what is actually the former. These notes were used by John Macoun in his "Catalogue of Canadian Birds". Loring's collections were reported on by E.A. Preble in his "Biological Investigations of the Athabaska-Mackenzie Region".

In 1911 the Alpine Club of Canada undertook an expedition to the Jasper-Robson area. In the party were two members of the staff of the United States National Museum, Ned Hollister and J. H. Riley. As a result of the work of this expedition the natural history of the whole region was dealt with in a special number of the Canadian Alpine Journal, in 1912.

Since the park became accessible by railroad a number of naturalists have visited it but few of their observations have been put on record. In 1917, James M. Macoun and William Spreadborough, later joined by P. A. Taverner, made collections in the Jasper and Mount Edith Cavell regions, for the National Museum of Canada. In addition to the published account, the manuscript notes and list of specimens were kindly made available to the writer by Mr. Taverner.

In 1918 and 1919, Spreadborough returned to the park and made further collections from June to September in the former year, and in June and July in the latter. Still other collections for the National Museum of Canada were made in June and July, 1930, by the present author. The result of these efforts is a fairly complete representation of the summer birds of Jasper. However, nearly all of this work had been done at Jasper, Henry House, Mount Edith Cavell, and the head of the Smoky, and left the vast hinterland of the park untouched. At the same time the transient bird population was virtually unknown.

In March and April, 1951, Dr. C. H. D. Clarke now of the Ontario Department of Lands and Forests, travelled the south boundary of the park, going out by Jacques Lake and Rocky River, and by way of Cairn Pass to the Brazeau River watershed, and returning by way of Poboktan Pass. He also ascended the Snake Indian River to Blue Creek and Topaz Lake.

More recent field work incidental to big-game investigations in the park has taken the author to almost all parts of it and, inasmuch as this field work covered periods from April to December, preliminary appraisal of migrant species was possible for the first time. Observations upon the birds and the few specimens taken were at all times secondary to other studies and consequently are not as complete as they would have been had a serious ornithological study been the primary effort.

In 1943, the author spent a week in the Athabasca Valley in mid-April, and in July, August, and September travelled the south boundary trail, entering over Nigel Pass and passing by way of Jonas Pass and Indian Pass to the Brazeau icefields. From there in to Jasper the same route was followed as used by Clarke on his way out. The north boundary was ridden from Devona to Robson by way of Snake Indian Pass.

Field work of 1944 covered much of the same areas as that of the previous year. Beginning on May 2, the author, accompanied by James Hatter, ascended the Snake Indian to Blue Creek and Topaz Lake, worked the Athabasca and Miette Valleys from Yellowhead Pass to East Gate and the Banff-Jasper Highway area, and finally travelled the south boundary by way of Poboktan Pass, Brazeau River, Southesk River and Pass, and down the Rocky to Jacques Lake. This time the Maligne Lake area was visited and the lake explored along its entire length. In December of the same year observations were made at Jasper and Devona. Additional field work was carried on in the Athabasca Valley in July, 1945, and in May and June, 1946.

Dr. Clarke, in 1941, drew up a preliminary draft of a report upon the birds of Jasper Park. He has generously permitted free use of his manuscript during the preparation of this paper. The historical notes in the introduction, many of the references to observations by Loring, Taverner, and Spreadborough, and all references to bird occurrences in 1941 are cited in substance from his manuscript and this very considerable assistance is gratefully acknowledged.

The author wishes to express his gratitude also to Dr. A. L. Rand, formerly of the National Museum of Canada, for his co-operation in giving critical examination to certain specimens from Jasper now in the National Museum; to Dr. V. E. F. Solman, Canadian Wildlife Service; and to W. Earl Godfrey, National Museum of Canada, for his critical review of the manuscript. Other notes of particular interest have been supplied by Dr. Harrison F. Lewis, formerly of the Canadian Wildlife Service and K. T. Rogers of the University of Michigan.

Physiography

Jasper Park lies completely on the eastern slope of the Rocky Mountains. Its western boundary is the height of land, which is also the interprovincial boundary between British Columbia and Alberta. The park extends eastward to the last divide to reach appreciably above timber-line. From the northern boundary, which falls just south of latitude $53^{\circ} 30' N.$, to the southern line, on the divide between the Sunwapta and Saskatchewan Rivers and along the Brazeau River, the distance is roughly 130 miles.

As might be expected, so large an area of mountainous terrain has wide climatic variation. There are no weather recording stations in the western portion of the park, along the main divide, but both warden observations and the vegetation make it apparent that there are pockets of high humidity, particularly in the vicinity of Fortress Lake and the Smoky Valley. In the eastern part of the park, along the Athabasca Valley, annual precipitation is light, with a year average of 13 inches at Jasper. It will be apparent that in this region also the

winter snowfall is scanty; it is reported that the snow depth seldom reaches six inches. This has an important bearing on the winter distribution of birds and mammals in the park.

The vertebrate faunal areas of the park are three. Along the Athabasca Valley, and to a less extent in the Brazeau Valley east of Brazeau Lake cabin, are areas of low precipitation that constitute an intrusion of the Great Plains Parkland into the mountains. This area, however, has no direct communication with the major portion of that vegetation type, and for this reason lacks certain faunal elements characteristic of the Great Plains Parklands. It is the local manifestation of Halliday's (1937) Foothills Section of the Boreal Forest. In it, aspen dominates extensive areas; there are scattered stands of white and black spruce; and in the Athabasca Valley the hillsides facing south and east support heavy stands of Douglas fir, which here mark an intrusion from the west. Many of the slopes support grassland that belongs to an association altitudinally slightly higher than the "submontane mixed prairie" (Clark *et al*, 1942) though with several of the same plant species present. Among the native grasses included are mountain brome (Bromus pumpellianus) purple reed grass (Calamagrostis purpurascens), June grass (Koeleria cristata), wheat grass (Agropyron dasystachyum), needle grass (Stipa comata) and pine grass (Calamagrostis rubescens). Shrub growth is frequently locally abundant and features the shrubby cinquefoil (Dasiphora fruticosa) and buffalo-berry (Shepherdia canadensis), with mountain juniper (Juniperus scopulorum) and bearberry (Arctostaphylos Uva-ursi) common in some areas.

The rivers of this faunal area are probably the most important single influence upon the avifauna. That part of the Athabasca lying in it has little fall; the river course has changed frequently, leaving many back channels and several shallow lakes. Jasper Lake, 15 miles northeast of Jasper, contains water only from mid-May until early autumn. Through the rest of the year it is a waste of wind-drifted sand, through which the river follows a tortuous course. Snaring Lake and Talbot Lake in the same vicinity, particularly the latter, are shallow and in places their borders support reed beds and sedge meadows of considerable extent. They, with adjacent smaller ponds, constitute the major part of the park's waterfowl habitat, and provide extensive riparian habitats heavily populated with flycatchers and other insect-eating species. Between Talbot Lake and the Athabasca lies a small belt of sand dunes that are steadily increasing as game and horses eliminate the sod on adjacent sandy grassland. The virtual elimination of aspen by beaver has left the white birch (Betula papyrifera) as an important tree on the lake shore. Several pot-hole lakes near Jasper Village (Pyramid, Patricia, Annette, Edith, Beauvert, and several others) are of importance mainly as temporary resting places for transient waterfowl.

The Brazeau River falls fairly rapidly along its course through the park. Only in the vicinity of Isaac Creek is there much marshland associated with it. As this marshland has not yet been examined, its avifauna is virtually unknown.

Above the Parkland Biotic Area, beginning at or about 4,000 feet and occupying the mountain slopes throughout the park, is the Sub-Alpine Forest Biotic Area. In it the dominant tree is the Englemann spruce (Picea Engelmanni) and hybrids between this species and white spruce (P. glauca), with, at higher levels, balsam fir (Abies lasiocarpa) entering as a codominant. Where fire has removed the climax forest, regeneration is usually lodgepole pine (Pinus contorta). Near timber-line slide-denuded sidehills regenerate primarily in balsam fir.

Along the rivers at the lower limits of this forest type there are frequent intrusive stands of aspen or of balsam poplar (Populus balsamifera), and, as timber-line is approached, the broader, less inclined valleys usually feature more or less extensive riparian meadows. In the eastern parts of the park these are dominated by shrubby cinquefoil and perennial larkspur (Delphinium columbianus); at elevations between 6,000 and 6,500 feet and above, the latter association gradually gives way to the willow-dominated meadows of timber-line. In the northern and western half of the park shrubby cinquefoil and larkspur seldom occur as dominants, their place being taken by willows of several species.

The Sub-Alpine Forest of the east slope of the Rocky Mountains is poor in berry-bearing shrubs. Where light penetration is adequate the cranberry (Vaccinium Vitis-Idaea) and the alpine bearberry (Arctostaphylos alpina) are locally common, and the grouse berry (Vaccinium scoparium) is widespread and abundant. Crowberry (Empetrum nigrum) is common in some places near the upper margin of the forests. The dwarf blueberry (Vaccinium cespitosum) is of local distribution along the upper Snake Indian and Smoky Valleys. In the aspen forests the buffalo-berry is usually abundant. It is to be noted that, with the exception of the last mentioned, these are all species of prostrate habit or very small size and produce a berry crop in proportion.

The greater part of the lengths of the rivers of the park lie in the Sub-Alpine Forest Biotic Area. These mountain rivers and streams for much of their lengths are swift-flowing, with densely forested banks, and are of little direct importance to bird life. On the Snake Indian River near Blue Creek there are, however, several marshy lakes derived from, and closely adjacent to, the river. These have extensive marginal sedge meadows, and are known to support a small waterfowl population, but, as they have been visited only briefly, much remains to be learned concerning them.

Lakes are numerous in this biotic area but most of them are rockbound, or forested to the water's edge, and almost devoid of aquatic bird life. Into this group fall such lakes as Brazeau, Cavell, Maligne, Medicine, Jacques, Twintree, Topaz, and Southesk, as well as smaller ones, named and unnamed, too numerous to mention.

Miette River supports a riparian habitat in many ways transitional between those of the Parkland and Sub-Alpine Biotic Areas. It has extensive marginal growths of deciduous trees, including aspen, balsam poplar, alder (Alnus sp.), willows, and red-osier dogwood (Cornus stolonifera). Beaver activity has produced several large and small flooded areas that are in various stages of filling. Many are half-filled ponds, with the water-killed trees and shrubs still standing; others of greater age are now sedge-covered mudflats, traversed by the river, frequently in several channels; others again are now above the water table and have become grassy meadows bearing scattered clumps of willow and thin stands of aspen. The entire valley supports a heavy bird population.

The extensive alplands of the park fall into the Southern Alplands Biotic Area, as designated by Munro and Cowan (1944), and are characterized by the absence of forest cover save for scattered clumps of balsam and an occasional white-bark pine (Pinus albicaulis). Timber-line is reached at an average elevation of 7,000 feet. Immediately above timber-line, and extending into the timber as broad creekside meadows, there are vast areas on which the dominant vegetation consists of willows of several species, among which Salix Barrattiana is the most abundant. All are low-growing species and form dense mats to a depth of two feet or more.

Higher, the willows are replaced by the heaths, or heathers, and still higher, as the limit of vegetation is neared, the dwarf willow, (Salix nivalis) becomes a characteristic element in the flora. Forbs are in wide variety but are usually exceeded in numbers by the grasses and sedges. At the limits of vegetation the inflated oxytrope (Oxytropis podocarpa) and mountain saxifrage (Saxifraga oppositifolia) are among the most abundant species, and the Arctic and Alpine fleabanes (Erigeron uniflorus and E. lanatus) share the windswept ridges with the Arctic poppy (Papaver alpinum).

Above the limit of plant growth (about 8,300 feet) stretch the talus slopes, active slides, glaciers, rock cliffs, and crags of the higher peaks. These are of importance to but two or three species of birds, for which they provide essential nesting sites and resting retreats.

While ponds are numerous on the alplands, lakes are scarce. There are but two in Jasper Park that merit recognition

as such, namely, Amethyst Lake at timber-line in the Tonquin Valley and an unnamed blind lake on Southesk Pass that by underground effluent is the source of Rocky River. Flocks of waterfowl rest on these during the migration and spotted sandpipers nest on their shores.

Faunal Position

One hundred and seventy-eight species of birds can be assigned to the three categories: summer residents, permanent residents and transients (Fig. 1). The species occurring as vagrants or only in the winter months are disregarded in this analysis. The first category with 97 species is by far the largest, with transients (54 species) and residents (27 species) following. If each of these categories is broken down into five ecological communities: parkland forest, sub-alpine forest, alplands, water, and shore, it becomes apparent that the parkland forest of the lower elevations had 48 species as summer residents. This is more than twice that of the sub-alpine forests and almost four times that of the alplands. On the other hand the permanent residents show a different relationship. Here the sub-alpine forest has almost three times as many species as either of the other main communities.

Among the transient species en route to or from nesting grounds farther north the water birds (ducks, grebes, and gulls) predominate with 28 species compared with only seven nesting species.

It can be shown also that different relationships exist between the parkland and sub-alpine forests with respect to proportion of the nesting species that are residents throughout the year. Thus in the parkland forest six of 54 or 11 per cent are permanent residents whereas in the sub-alpine forest fifteen of 35 or 43 per cent fall into this category.

The proportion of transient to resident species in the mountains at this latitude is clearly indicative of the generally boreal location of the avifauna. Thus in the parkland forest 91 per cent of the species recorded nest there. In the sub-alpine forest at least 86 per cent are nesting forms and further study may reveal that all fall into this class.

The greater part of the known avifauna of Jasper Park consists of the normal inhabitants of the three biotic areas represented. However, if the Jasper avifauna is compared with that of Banff, Camrose (Farley) and the Peace River block of British Columbia (Cowan), some significant features of distribution can be observed.

The known avifauna includes 23 species not as yet reported from Banff Park. Seven of these--the common tern, Pacific loon, gyrfalcon, yellow rail, western kingbird, yellow-headed blackbird, and house finch--are known on the basis of single occurrences and for present purposes can be considered erratics with little faunal significance. Of the remaining 16, the willow ptarmigan is a northern species here reaching its southern limit; the Vaux swift is generally distributed west of the Rocky Mountains, and in Jasper reaches its easternmost limit. The rock wren, while not yet recorded for Banff, reaches its northernmost point in the Athabasca Valley at Jasper. The great grey owl is a northern species rare south of this latitude. All the remaining birds found in Jasper Park but not in Banff Park serve as a valuable indication of the western boundary of the path of migration of certain species.

Up the Mississippi flyway, to their nesting grounds in the far northwest, pass many species of birds. From a comparison of the avifauna of Banff Park with that of Jasper it is apparent that few of these Mississippi migrants come up against the east side of the Rockies as far south as the latitude of Banff Park, but several of them are represented in the Jasper avifauna. The white-throated sparrow, eastern phoebe, least flycatcher, black-poll warbler, and magnolia warbler all seem to fall into this category. All are present at Camrose and in the Peace River district, as well as in Jasper, but none of them has yet been recorded for Banff Park. A number of other species in this flight, present at Camrose and in the Peace River district, do not reach as far into the mountains as Jasper Park. Among these are the purple martin, Philadelphia and blue-headed vireos, black and white warbler, oven-bird, house wren, Nelson and swamp sparrows, and yellow-bellied sapsucker. These must travel a narrower or more easterly path. It is to be noted also that the shore-bird migration passes northeast of the park and at least 13 species regularly occurring at Camrose, Alberta, and in the Peace River district are unknown in Jasper Park.

Another group of birds winters on or near the Pacific Coast and travels inland to nesting grounds on the northern edge of the great plains and northward. This migration apparently passes over Jasper Park but north of the Banff area. In this category fall the herring gull, short-billed gull, ring-necked duck, and surf scoter, all of which occur regularly in the present area but rarely or not at all in the more southern park.

In the accompanying table are set forth the results of observations upon the earliest dates of arrival of certain of the birds of Jasper Park. Inasmuch as the writer's periods

of activity in the park varied during the three years in which these data were obtained, there are few species for which arrival records cover more than one year. Despite this, it is thought advisable to make existing data available for comparison with those for other areas lying to the north and to the west. There is still considerable doubt as to the migration route followed by certain birds of eastern distribution that are commonly found in summer in north central British Columbia. It is hoped that migration records for the eastern slope of the Rocky Mountains, when taken in comparison with those in that area of British Columbia, may throw some light on the question.

The most obvious migratory movement noted within the mountains is the southbound flight of hawks following the alpine meadows along the higher slopes.

One significant feature of migration that has become apparent during this study is that Yellowhead Pass, even though it is one of the lowest passes through the Rockies, is not on a populous east-west waterfowl flyway. The duck flocks in transit through the park are small and not part of the main flight.

As might be expected, the alpine-nesting fringillids, inasmuch as they arrive early, while their nesting ground is still snowbound, appear first in the lower valleys. During the migration the white-crowned, savannah, Lincoln, and golden-crowned sparrows, and the pipit, are for a time abundant along the Athabasca Valley. They work up to the higher levels gradually, as snow conditions permit. Heavy snowfall at higher elevations, before the migrating flocks have disbanded into territorial pairs, sends the flocks tumbling into the valleys again, to renew the upward movement later.

Many of the warblers and thrushes, on the other hand, appear to be fairly evenly distributed during migration, with no apparent concentration at the lower elevations. In general these species arrive later than the fringillids.

A heavy snowfall on May 21, 1944, was an example of one of the chief hazards to migration through mountainous terrain. At 4,500 feet altitude the ground was snow-covered for three days. This storm struck at the height of the northbound migration, at a time when many warblers, sparrows and thrushes were passing through. Losses, particularly to the olive-backed thrush, were heavy, and lead hermit thrush and water-thrush also were found. The sparrows apparently suffered little hardship, and no warblers in weakened condition were seen.

Table 1. Dates of First Arrival of Species
Recorded More Than Once

| <u>Species</u> | <u>1941</u> | <u>1943</u> | <u>1944</u> |
|----------------------|-------------|-------------|-------------|
| American golden-eye | March 3 | - | - |
| Crow | " 21 | - | April 4 |
| Mountain bluebird | " 23 | April 16 | " 2 |
| Robin | " 23 | - | " 2 |
| Slate-coloured junco | " 23 | - | " 5 |
| Red-winged blackbird | - | - | " 2 |
| Canada goose | March 26 | - | - |
| Rusty blackbird | - | - | April 3 |
| Townsend's solitaire | April 3 | - | - |
| Varied thrush | " 3 | April 20 | - |
| Flicker | " 7 | - | April 4 |

Table 2. Dates of First Arrival for Species
Noted in Only One Year

| <u>Species</u> | <u>1941</u> | <u>Species</u> | <u>1943</u> |
|------------------------|-------------|------------------------|-------------|
| Mallard | April 7 | Ruby-crowned kinglet | April 10 |
| Baldpate | " 9 | Kildeer | " 12 |
| | <u>1943</u> | | |
| Barrow's goldeneye | April 16 | Greater yellowlegs | April 18 |
| Green-winged teal | " 17 | Audubon's warbler | " 19 |
| Tree swallow | " 17 | Song sparrow | " 20 |
| Chipping sparrow | " 17 | Fox sparrow | " 23 |
| Sparrow hawk | " 18 | | |
| | <u>1944</u> | | |
| Orange-crowned warbler | May 2 | Wright's flycatcher | May 15 |
| Belted kingfisher | " 2 | Mourning dove | " 16 |
| Lincoln's sparrow | " 3 | Red-eyed vireo | " 19 |
| White-crowned sparrow | " 3 | Wilson's snipe | " 19 |
| Vesper sparrow | " 4 | Cliff swallow | " 19 |
| Ruddy duck | " 5 | Townsend's warbler | " 21 |
| Lesser scaup duck | " 5 | Black-poll'd warbler | " 21 |
| Purple finch | " 5 | Spotted sandpiper | " 21 |
| Violet-green swallow | " 5 | Olive-backed thrush | " 21 |
| Hermit thrush | " 5 | White-throated sparrow | " 22 |
| Common loon | " 6 | Golden-crowned sparrow | " 23 |
| White-winged scoter | " 6 | Water-thrush | " 23 |
| Western tanager | " 6 | Yellow-throat | " 23 |
| Tennessee warbler | " 6 | Yellow-warbler | " 23 |

Table 2 - (Cont'd)

| <u>1944</u> | | | |
|---------------------|-------|------------------------|--------|
| Warbling vireo | May 6 | Nighthawk | May 24 |
| Herring gull | " 8 | Sora rail | " 25 |
| Solitary sandpiper | " 10 | Olive-sided flycatcher | " 28 |
| Water pipit | " 10 | Magnolia warbler | " 28 |
| Eastern phoebe | " 10 | Black-capped warbler | " 28 |
| Savannah sparrow | " 10 | Cedar waxwing | June 2 |
| Traill's flycatcher | " 10 | Eastern kingbird | " 5 |
| Cowbird | " 11 | Wood peewee | " 5 |
| Myrtle warbler | " 14 | Clay-coloured sparrow | " 15 |
| Rufous hummingbird | " 14 | | |

Annotated List

In the following pages there are treated 195 species of birds for which there seems to be conclusive evidence of occurrence within the present boundaries of Jasper Park. In most cases these occurrences are substantiated by specimens, most of them in the National Museum of Canada, but some in the United States National Museum and some in the Museum of Zoology of the University of British Columbia.

The majority of racial identifications have been made following careful examination of specimens, but because the purpose of the paper is not primarily a taxonomic one, discussion of intergradation and other morphological trends has been kept to a minimum. An asterisk is used to indicate an identification made without reference to specimens from the park.

This is certainly not a complete list of all birds that have occurred or will occur in the park; but it includes all species for which there is either specimen evidence or satisfactory sight records either published or in the writer's notebooks. It is hoped that it will stimulate observation of the details of both northbound and southbound migration, nesting dates, and the occurrence of species not yet recorded in the park.

*COMMON LOON. Gavia immer (Brünnich)

The loon is not abundant on the lakes of the park but a few pairs are present every year. Thus Preble states that, in 1896, Loring noted it along the route between Jasper House and Smoky River, August 20 to October 8. During the present investigations loons were noted on Lake Edith, Maligne Lake, and Talbot Lake during the summer months.

Breeding.-Loons are known to nest only on Talbot Lake where in late June, 1930, three pairs were seen with downy young. Again in 1944 a pair with two newly hatched chicks was seen on the same lake. On May 23, 1946, two nests, each with two eggs, were found on that lake and two other pairs were seen about the same time on Pyramid Lake.

PACIFIC LOON. Gavia arctica pacifica (Lawrence)

On July 27, 1944, a full-plumaged adult female of this species was taken on Maligne Lake, where it had been feeding for several hours along the shallow margin. Its stomach contained four large leeches and some aquatic insect larvae.

RED-NECKED GREBE. Colymbus grisegena holböllii (Reinhardt)

Only around Talbot Lake and closely adjacent parts of the Athabasca Valley is there suitable nesting habitat for this species and as yet it has not been conclusively established that it nests in the park. However, a red-necked grebe seen skulking in the reed beds at Talbot Lake on June 15, 1944, suggested the possibility of the species nesting there.

Taverner and Spreadborough saw several and took specimens near Jasper in September, 1917; others were seen by the writer on Pyramid Lake on May 5, 1944, and on Talbot Lake on May 3, 1945. Thirty were counted on Lac Beauvert on May 4, and 12 on Annette Lake on May 8, 1945. In 1946 a total of 18 appeared on Lake Edith on various dates between May 7 and May 23.

*LEARED GREBE. Colymbus caspicus californicus (Heermann)

On May 6, 1944, two of these small grebes in nuptial plumage were seen at close range on Pyramid Lake. They remained through the day but left early in the evening. On May 4, 1945, nine in nuptial plumage floated at rest near the southern corner of Lac Beauvert and on May 8, a compact flock of 16 fed in the shallow margins of Annette Lake. Three seen on Lake Edith on May 7, 1946, were the only ones recorded that year.

*HORNED GREBE. Colymbus auritus cornutus Gmelin

Taverner recorded one seen near Jasper on September 10, 1917. Another record was made on May 25, 1946, when a single adult was seen on Talbot Lake.

*WESTERN GREBE. Aechmophorus occidentalis (Lawrence)

Seen only once but probably of regular occurrence during migration. Two grebes of this species were noted on Jasper Lake on June 2, 1944.

xPIED-BILLED GREBE. Podilymbus podiceps (Linnaeus)

One seen by K. T. Rogers near Jasper on August 15, 1951.

xGREAT BLUE HERON. Ardea herodias (Linnaeus)

Seen once only, at Maligne Lake by a local observer from Jasper.

xWHISTLING SWAN. Olor columbianus (Ord)

This species probably occurs regularly in small numbers during the migration periods but there are few positive records. On May 4, 1944, eight adults certainly of this species rested and fed on Talbot Lake where they were watched at close range.

xTRUMPETER SWAN. Olor buccinator (Richardson)

There are scattered records of the occurrence of swans here and there throughout the park during the spring and summer months. Most of these were not identified as to species but were probably trumpeter swans. For instance, a pair of swans present on Fortress Lake in June, 1930, and again in June, 1931, was probably of this species.

At Pocahontas on May 3, 1945, a very large swan sat on a sandbar alongside a Canada goose. It was examined at close range with 8x glasses and judged to be certainly a trumpeter swan.

CANADA GOOSE. Branta canadensis moffitti Aldrich

Canada geese occur in the park as transients and as summer residents. In 1941, the first arrivals of the spring were noted at Willow Creek on March 26. Thereafter they were seen on the Snake Indian in a large pond near Willow Creek and on the Athabasca Flats.

In 1943, 12 pairs were counted along the Athabasca from Snaring east to Pocahontas on April 16, and five more pairs along the Miette west to Decoigne on April 20.

On May 6, 1944, 20 geese, mostly in pairs, were counted around Talbot Lake and along the Athabasca near Pocahontas. Another five pairs were noted apparently on nesting territory along the north side of the Athabasca between Devona and Miette on May 10, 1944; others were seen on Buffalo Prairie and up the Miette. In all, it was estimated that at least 40 pairs were on territory along the Miette and Athabasca Valleys in May, 1944.

On May 24 and 25, geese were seen at Willow Creek and Deer Creek under circumstances that suggested that they were non-breeders. A small nesting population was present at Blue Creek, together with several non-breeding individuals.

Apparently there is a post-breeding concentration of geese on some large flood meadows just east of Decoigne warden cabin. Here in late August, 1944, about 150 were assembled. Warden reports indicate that this was an annual occurrence.

Breeding.-In the first week of May, 1944, riders hunting horses at Talbot Lake found two goose nests containing eggs.

At Blue Creek on May 26, 1944, a pair of geese with six newly hatched goslings was seen. Later in the day two small goslings were swimming and calling in Snake Indian Lake. One of these saw the observer and without hesitation left the water and came to him.

On July 26, 1944, at the mouth of Maligne River on Maligne Lake, a group of geese seen contained some flightless young.

On May 23 and 25, 1946, a count of goose nests on Talbot Lake was undertaken. Sixteen nests were located, all of them on islands. One had been destroyed by crows or magpies; 12 had hatched, and three still contained eggs, three, four and seven, respectively. On May 31, following heavy floods, six pairs of geese were counted on the big meadows at Decoigne. The behaviour of these birds suggested that they had lost their nests. Flooding seemed to be the most probable cause. At the same place a pair nested in an osprey's nest. Apparently they hatched their eggs on June 12 or 13. Other geese were known to be nesting along the Athabasca River from the east boundary to Maligne River, on Buffalo Prairie, at Maligne Lake and Snake Indian Lake, and along the Brazeau River. The nesting population of the park in 1946 was certainly not less than 50 pairs and may have numbered from 75 to 100 pairs.

Identity.-More than one race of Canada goose is represented in the migrants and perhaps also in the summer residents in the park. A single cackling goose (Branta canadensis minima Ridgway was seen with a large flock of snow geese at Devona on May 8, 1944. With a group of six geese seen on a lake near Deer Creek on May 25, 1944, were two so much smaller than the others that there is little doubt that they were of one of the races of lesser Canada geese, probably B. c. parvipes (Cassin).

SNOW GOOSE. Chen hyperborea hyperborea (Pallas)

Snow geese were reported by the wardens to have rested on Talbot Lake during the spring migration of 1942.

In 1944, during the heavy snowstorm of May 9, a large flock of snow geese apparently lost its way. Warden White at Decoigne saw them during the afternoon. They were then headed west, for Lucerne Lake. Later in the day Warden Macdonald saw what was almost certainly the same flock at Medicine Lake. It spent the night on Talbot Lake and at 8 a.m. on May 10 passed over Devona, flying in a westerly direction. At that time 200 birds were counted.

In 1946 a flock of about 100 passed over Jasper on May 17 and a single bird remained on Talbot Lake consorting with the Canada geese. It was seen there on May 23 and collected for identification on May 25.

MALLARD. Anas platyrhynchos platyrhynchos Linnaeus

This is the most abundant and widely distributed of all the waterfowl in the park. It is an early arrival, one flock of 16 being seen near Princess Lake on April 7, 1941. A golden eagle was seen to make an unsuccessful stoop at this group.

In 1943 and 1944 mallards were seen all along the Miette and Athabasca Valleys from Yellowhead Pass to the eastern boundary. They were less common up the Sunwapta but were seen as far south as Mile 50 on the Banff-Jasper Highway. Mallards were encountered in small numbers at Willow Creek and Blue Creek and through the length of the Brazeau Valley.

Breeding.-A late brood of downies was seen at Brazeau Lake on July 9, 1944. The earliest brood seen was on June 8. Ducks with broods at various stages of growth were noted also at Blue Creek, Decoigne, and below Rocky Forks on the Rocky River.

*GADWALL. Anas strepera Linnaeus

The only record for the park is of a pair seen on Talbot Lake on May 10, 1946.

PINTAIL. Anas acuta tzitzihua Vieillot

The pintail occurs primarily, if not solely, as a migrant through Jasper Park and is not abundant.

During the spring migration two birds were recorded at Edith Lake on April 14, 1941. Sixteen were noted at Talbot

Lake on May 4, 1944 and on May 6, four were seen at Patricia Lake and 18 on marshy ponds adjoining Talbot Lake. In 1946, eight were seen on Lake Edith on May 8 and a pair on Talbot Lake on May 23.

The autumn migration is represented by one seen south of Jasper by J. D. Soper in August, 1938, several resting on the Athabasca River near Henry House, August 8, 1930, and a number seen in the same place September 15, 1911, and recorded by Riley.

GREEN-WINGED TEAL. Anas carolinensis Gmelin

This teal occurs regularly in the park in spring and autumn and a few pairs remain into the nesting season under circumstances that suggest that they are nesting. However, as yet there are no definite breeding records from the park.

In May, 1944, green-winged teal were numerous along the Miette River, where they were distributed in pairs on the river and in the adjoining beaver ponds. They remained there in fair numbers until at least May 15. On May 20 and 21, 1944, a pair was seen at Willow Creek; two pairs were noted at the same place on May 24. On May 27 and 28, a pair was present on Snake Indian Lake and by their behaviour it was judged that they had a nest there. A pair was present on Talbot Lake on June 15 and a single bird at Brazeau Lake cabin on July 7, 1944. In 1943 a pair was seen on Talbot Lake on April 17 and a flock of eight were at the same place during the first week in September. The species was scarce in 1946, when only two were seen, both on Talbot Lake, one on May 21, the other on June 2.

Other autumn records are four shot at Henry House, September 15, 1911 (Riley); a specimen collected in the park by Spreadborough on August 27, 1918; and four seen by J. D. Soper near Athabasca Glacier on August 9, 1938.

BLUE-WINGED TEAL. Anas discors Linnaeus

On July 22, 1918, Spreadborough collected a female and two young of this species in the park. A female with four young was seen on Cairn Pass on August 6, 1943, and this is the only record made by the writer until 1946 when it was not uncommon in migration and appeared to be nesting on Talbot Lake. Twenty, almost all mated pairs, were seen near Talbot Lake on May 19, 23, 25, and 29.

*EUROPEAN WIDGEON. Mareca penelope (Linnaeus)

On May 3, 1945, an adult male was watched for several minutes, at distances as close as 25 feet, on a small pond near the eastern end of Talbot Lake.

*BALDPATE. Mareca americana (Gmelin)

This duck occurs in the park primarily as a migrant and on the basis of present observations it is not abundant.

even in that category. An occasional straggler remains into the summer.

In 1930 several were seen, or one bird seen several times, on Talbot Lake on June 27 and subsequently. In 1941, two were seen at Miette on April 10 and two at Edith Lake on April 14. A single female on Talbot Lake on September 5 was the only baldpate recorded in 1943. Four were present on Talbot Lake on May 6, 1944, and on June 23 of the same year a lone male was feeding on the same lake. In 1946, three seen on Lake Edith on May 13 provided the only record.

xSHOVELLER. Spatula clypeata (Linnaeus)

Of casual occurrence, during the spring migration at least. On May 4, 1944, 16 were counted on Talbot Lake and adjacent sloughs. Edith Lake had four on May 5; on May 6 there were three on Pyramid Lake; and on May 14, four on Talbot Lake. In 1946 the only record was of 10 seen on Edith Lake on May 8.

RING-NECKED DUCK. Aythya collaris (Donovan)

Spreadborough collected specimens of this species and saw others near Jasper on August 4 and September 10, 1917. Five males and two females were seen at Talbot Lake on May 12, 1945.

xCANVAS-BACK. Aythya valisineria (Wilson)

A single adult male seen on Talbot Lake on May 6, 1944, is the only record of this duck in the park during the field work of 1941-44. The only record in 1946 was of five birds on Talbot Lake on May 23, 1946. However, in 1930, on August 8, a small flock was seen resting on the Athabasca between Snaring and Henry House. It thus seems probable that the canvasback passes through the park in small numbers during both migrations.

LESSER SCAUP. Aythya affinis (Eyton)

Lesser scaup were fairly common in the lakes adjoining the Athabasca below Jasper and on Snake Indian Lake at Blue Creek during the spring migration of 1944. The first seen were four on Edith Lake on May 5; the following day there were four pairs on Talbot Lake and a pair on Pyramid Lake. Thirteen appeared at Willow Creek on May 24 following the heavy snowstorm of May 23, and on May 27 and 28, seven were seen on the Snake Indian Lakes above Blue Creek. On July 1 there was a single drake on Cavell Lake. On June 25, 1930, a female with a broken wing was destroyed on Talbot Lake. Other scaups were present on the lake at the same time. This duck was less common in 1946 than previously and only 13 were seen, all in the month of May.

Breeding.-The evidence of breeding is circumstantial. From June 1 to June 15, 1944, two pairs were constantly present on two small ponds west of Talbot Lake. Sometimes the females were with their mates, at other times the males were alone. On June 23 the four birds were still on the same territories and on June 27, when only one drake could be found, a search was made for the nest. This was unsuccessful but the nature of the cover made the hunt most difficult.

AMERICAN GOLDEN-EYE. Bucephala clangula americana (Bonaparte)

This species apparently occurs in Jasper Park only as a migrant. Even the July records cited below almost certainly places it in this category.

The earliest report of this bird in the park is that of Preble who states that Loring reported shooting several near Jasper House in the autumn of 1895.

On July 25, 1930, an adult male in full plumage swam and fed within eight feet of the writer who was hidden near a beaver lodge on the shores of Talbot Lake. Earlier in the same month (July 9) other males were seen on Amethyst Lake.

One was seen near Jasper on March 3, 1941, but the species was not recorded during 1943 and 1944.

BARROW'S GOLDEN-EYE. Bucephala islandica (Gmelin)

This is the most abundant duck in the park. In late April and May almost every slough and beaver pond has its one or two pairs and later in the summer the females with their broods are to be seen on ponds, lakes, and stream-side sloughs, principally along the Athabasca and Miette Valleys, but in smaller numbers also along the Brazeau and Snake Indian Rivers. In 1944, a total of 199 Barrow's golden-eye were tallied during May, June and July.

Breeding.-In 1944, the first broods seen were on Talbot Lake on June 15. On that date one female had nine newly hatched downies, another had seven. A female with 11 large young was seen on Medicine Lake on August 8, 1943, and one with six young was observed on Jasper Lake on August 10, 1943. On June 13, 1946, a nest from which the young had just hatched was found in an abandoned pileated woodpecker's nest cavity in a large fir near Lake Edith.

BUFFLE-HEAD. Bucephala albeola (Linnaeus)

Preble states that in 1896 Loring found this species common and breeding at Henry House in July, and noted it on most of the lakes between Jasper House and the Smoky River, August 20 to October 8. Spreadborough observed it near Jasper several times in 1917 and collected specimens on August 4 and September 7.

In view of this earlier abundance it is significant that neither in 1943 nor in 1944 was there any indication that this duck was breeding in the park. In 1943, four at Decoigne were the only ones noted between April and September. In 1944, 26 were counted between May 1 and 28 and none was seen after the latter date. In 1946, 37 were counted during May. These were along the Miette River and on Pyramid, Edith, and Snake Indian Lakes.

In 1946, it apparently again nested in the park, as the behaviour of several pairs seen along the Miette River left little doubt that they had nests near by.

OLD-SQUAW. Clangula hyemalis (Linnaeus)

This species was not recorded for the park prior to 1944, but on May 6 of that year the distinctive call notes of the species were heard on both Patricia and Pyramid Lakes and 13 birds were counted and watched as they went through their courting performance. In 1946 it was slightly more abundant and 22 birds were counted on Lake Edith between May 6 and 11.

HARLEQUIN DUCK. Histrionicus histrionicus pacificus Brooks

This is not a common species in the park but was recorded from such widely separated points as Topaz Creek, Maligne River, Brazeau Lake, and Southesk Lake during the field work of 1943 and 1944.

In 1943, three females seen on Brazeau Lake on July 31 were the only harlequins encountered all summer, but in 1944, 10 individuals were noted during May, June, and July. In 1946, two females and eight males were seen on Medicine Lake on June 6.

Breeding.-Spreadborough collected a female and half-grown young on Cavell Lake on August 30, 1917. On July 19, 1944, a duck with three downies was seen on Rocky River just above Rocky Forks.

*WHITE-WINGED SCOTER. Melanitta deglandi (Bonaparte)

Fifteen individuals were seen in May and June, 1944. On May 6, there were five males and a female on Pyramid Lake; on May 7, four individuals were on Patricia Lake. On May 25 one was noted on an unnamed lake near Deer Creek on the Snake Indian River. Later in the summer, on June 14, there was a pair each on Pyramid and Patricia Lakes, but they were not seen there in late June or July and apparently did not stay to nest. In 1946, 35 individuals were counted on Lake Edith and Medicine Lake between May 13 and June 5.

Several drakes seen on Amethyst Lake on July 9, 1930, were probably on their return migration to salt water. The same is probably true of a flock of 21 birds on the blind lake on Southesk Pass on July 19, 1944.

SURF SCOTER. Melanitta perspicillata (Linnaeus)

The only spring records prior to 1946 were two males seen during 1944, one on a small lake near Willow Creek on May 25 and the other on Snake Indian Lake at Blue Creek on May 27. In 1946, however, there was a fair migration through the park and 136 were counted on Lake Edith and Pyramid Lake between May 12 and 27.

Several males resting on Amethyst Lake on July 9, 1930, were doubtless on their postbreeding movement back to the sea coast.

*RUDDY DUCK. Oxyura jamaicensis rubida (Wilson)

Five ruddy ducks seen on Lake Edith on May 5, 1944, and a single one on Snake Indian Lake at Blue Creek on May 28, 1944, are the author's only records for the species. Dr. Wm. Rowan, however, informed me that he has noted this bird on Lake Edith almost every spring.

*HOODED MERGANSER. Lophodytes cucullatus (Linnaeus)

A pair of this species was seen on Talbot Lake on September 19, 1945, by Dr. Lewis, and four were observed at Snaring on August 11 and 12, 1951.

COMMON MERGANSER. Mergus merganser americanus Cassin

The common merganser is a summer resident in the park in small numbers but is fairly common during migration. In 1944, 42 were counted; 27 in May, 12 in June, and three in July. Those in May and June were at various points along the Athabasca River, and along the Snake Indian River and Blue Creek as far as Topaz

Lake. The summer records were from Maligne Lake except for a female and brood seen near Snaring in mid-August, 1951.

Near Topaz shelter on August 19, 1943, a single female was foraging in the deep part of a beaver pond, diving repeatedly in pursuit of some small trout.

Breeding.-Spreadborough reported the species as breeding at Jasper Lake in 1898 and at this locality on August 8, 1943, a female and 10 young were seen. A female with eight downies was seen at Pocahontas on June 29, 1946.

*RED-BREASTED MERGANSER. Mergus serrator serrator Linnaeus

Recorded for the first time in 1946 when three were on Edith Lake on May 6, five others on May 8, and a single drake on May 10.

AMERICAN GOSHAWK. Accipiter gentilis atricapillus (Wilson)

This large hawk is a summer resident in small numbers and becomes locally abundant during the autumn migration.

In 1943 an adult was seen at Nigel Pass on July 27, an adult and juvenile at Shalebanks on August 14, an adult at Little Heaven summit on August 16, and three juveniles at Topaz shelter on August 19. In 1944 an adult was observed harrying an unidentified animal at Beaver Lake on July 23 and another was surprised at Maligne Lake on July 26 as it fed upon a young rabbit it had just killed.

Spreadborough collected a specimen on June 15, 1918.

SHARP-SHINNED HAWK. Accipiter striatus velox (Wilson)

A rather uncommon migrant through the park that nevertheless occurs regularly in August and September and less frequently in the spring.

Riley saw several at Henry House in September, 1911, and so did Taverner in 1917 and Spreadborough in 1918.

In 1943 none was seen until August 19 and 20 when two juveniles passed southward along the valley of Blue Creek near Topaz Lake.

In 1944 an adult was observed actively hunting among the low shrubs on the sub-alpine creekside meadows at Topaz Creek on May 28 and another was seen at Willow Creek on June 1. The only spring record in 1946 was of one seen on May 8.

COOPER'S HAWK. Accipiter cooperi (Bonaparte)

An uncommon migrant and summer visitant in the park. Taverner collected one near Mount Edith Cavell in 1917 and two others were seen by his party. Another was taken by Spreadborough in 1918.

In the summers of 1943 and 1944 this bird was seen only seven times: near Jasper on May 10, June 19, and June 26; at Willow Creek on May 26; at Topaz Lake on May 30 and August 19; and near Isaac Creek on August 1. It will thus be seen that this hawk was found through the valleys, principally toward the eastern edge of the park.

RED-TAILED HAWK. Buteo jamaicensis calurus Cassin

This hawk was seen fairly frequently during May and June, 1944, along the Athabasca Valley from Honeymoon Lake to Miette Station and up the Snake Indian Valley to Willow Creek; and in August, 1943, young and adults were much in evidence at Shalebanks, Little Heaven Summit, and Topaz Lake.

Breeding.-On May 9, 1946, a pair of these hawks was defending a nest in a tall fir about a mile northwest of Miette Station, and in the same area another pair was defending territory near Decoigne. A nest on Talbot Lake contained two eggs when it was discovered on May 23 and another near the mouth of the Maligne River had one egg and one newly-hatched chick on May 31. The male at the latter nest was melanistic.

×FERRUGINOUS ROUGH-LEGGED HAWK. Buteo regalis (Gray)

While the author was working his way down a treacherous canyon five miles east of Brazeau Lakes warden cabin on July 9, 1944, a pair of hawks circled, screaming, overhead for several minutes. Both were in the black colour phase but the large size and high-pitched screaming calls left little doubt of their identity.

GOLDEN EAGLE. Aquila chrysaetos canadensis (Linnaeus)

From the time of the first biological explorations eagles have been fairly common and widely distributed through the park area.

During the time spent by Clarke in the park in March and April, 1941, 24 eagles were seen. In August, 1943, 10 eagles were seen by Cowan in various parts of the park; and the count for

May, June, and July, 1944, was 23. No instances of the molesting of the young of big game were noted, despite careful watch, but one reliable account of an attempt at such predation was received. A yearling bird was seen feeding on a dead, mangy coyote at Devona on May 8, 1944, and two others were observed feeding on coyote carcasses at Miette on May 9.

Breeding.-In July, 1931, a pair of eagles had young in a nest on a cliff edge below Old Fort Point. This site was unoccupied in 1943 and 1944.

*BALD EAGLE. Haliaeetus leucocephalus washingtonii (Audubon)

Preble reports one seen near Jasper House in the autumn of 1895. Taverner saw one on September 3, 1917, at Lake Cavell. At Devona on April 9, 1941, two were seen, and others were reported from the Athabasca Valley in March of that year. None was seen in 1943 or 1944 but on May 3, 1945, one adult and two yearlings were seen fishing in Talbot Lake.

Breeding.-A nest was found on the Maligne horse range in 1946. It was in the top of a live Douglas fir tree and when examined on June 5 it contained one young about the size of a domestic fowl.

MARSH HAWK. Circus cyaneus hudsonius (Linnaeus)

To date this hawk has been noted primarily as an autumn migrant. For instance, according to Preble, Loring found it common between Jasper House and the Smoky in the autumn of 1896. Riley saw it at Henry House on September 18, 1911, and Spreadborough near Jasper on July 25, 1917. Soper saw one near Henry House and several at the head of Sunwapta in August, 1938.

In 1943 and 1944, 16 were noted. The first seen in 1943 were two young of the year at Brazeau Basin on July 29; in 1944, a juvenile at Maligne Lake on July 26. During August, 1943, this species was recorded hunting the alplands at Cairn Pass, Little Heaven Summit (seven on August 16), and Topaz shelter (three on August 19).

*OSPREY. Pandion haliaetus carolinensis (Gmelin)

The present breeding population of osprey in Jasper Park is either four or five pairs and there is nothing to suggest that they were ever more abundant.

Breeding.-Loring found a nest with one young on September 3, 1895, about 20 miles west of Henry House. A nest on Snake Indian Lake near Blue Creek was examined on April 4,

1941, and again on August 23, 1943. On the latter date a pair of ospreys wheeled and screamed in the vicinity.

A pair was watched feeding its young on June 15, 1944, in a large nest on the south shore of Talbot Lake.

In 1946 the two nests mentioned above were again occupied, and in addition one of two nests at Decoigne contained eggs on May 31, on which date the other was occupied by a Canada goose. There was another nest near Lac Beauvert.

*WHITE GYRFALCON. Falco rusticolus obsoletus Gmelin

Known from the park solely from the observation of a single bird at very close range on the Columbia Icefield in July, 1938, by Walter Spofford, of Vanderbilt University, Nashville, Tennessee.

*PEREGRINE FALCON Falco peregrinus Tunstall

Soper saw several on the upper Sunwapta River in August, 1938. On August 17, 1943, an adult male was seen several times high above timber-line east of Mowitch Creek. Another was seen at Byng Pass on August 24, 1943. From these records it would seem that the peregrine is a rare visitant to the park during the autumn migration.

*PRAIRIE FALCON Falco mexicanus Schlegel

There are just two records for Jasper Park. One was seen on August 3, 1943, on the slopes of Mount Southesk above Cairn Pass, where it flew past at close enough range to permit identification. The other was noted at Amethyst Lake, August 24, 1951, by K. T. Rogers.

*PIGEON HAWK Falco columbarius Linnaeus

This falcon is probably more abundant than the two previously listed. Spreadborough first recorded it for the park on the basis of a single bird seen in 1917.

In 1944 two were seen at Willow Creek on May 22 and a pair was seen at several points on Henry House Flats during the latter half of June. On June 4, 1946, at Moberly Flats, a magpie was watched for five minutes as it pursued a male pigeon hawk.

AMERICAN SPARROW HAWK Falco sparverius sparverius Linnaeus

An abundant summer resident in all parts of the park. At Devona on August 13, 1943, about a dozen were foraging for grasshoppers. In 1943, the first arrival was seen on April 18; in 1944, on May 5.

Breeding.-On July 23, 1944, a pair was feeding young in an abandoned flicker nest-hole at Medicine Lake. A family of young, just out of the nest, was calling for food at Cairn Cabin on August 3, 1943.

BLUE GROUSE Dendragapus obscurus richardsonii (Douglas)

This grouse occurs in small numbers in the open forest types at all elevations, with centres of abundance along the benchland bordering the Athabasca and Brazeau Rivers and in the timber-line habitat in the northern half of the park.

Breeding.-Females with broods have been recorded from 15 miles south of Henry House (Preble); Topaz Shelter (August 21, 1943); Rocky River (August 7, 1943); Brazeau River (July 9, 1944); Cairn Pass (July 17, 1944); and Maligne Lake (July 27, 1944). Hooting males with hens in attendance were seen at Devona, Celestine Lake, and Shalebanks on May 2, May 12, May 18, 1944, respectively.

SPRUCE GROUSE Canachites canadensis canadensis (Linnaeus)

This is the most abundant species of grouse in the park and though its average density is low it is found sparingly in all parts of the park that support spruce or pine forests. In earlier years it was apparently more abundant than now as Preble states that in 1896 Loring found the species common between Jasper House and the Smoky River.

In 1941 15 individuals were counted in a six weeks' field trip that took the observer around the south boundary and up the Snake Indian River to Topaz Lake.

In six weeks of August and September, 1943, 11 spruce grouse were seen. Over much the same area, in May, June, and July, 1944, 31 grouse were tallied.

Breeding.-On April 3, 1941, at Blue Creek Cabin, a male was in full display. No nests were found during the three seasons' work in 1941, 1943, and 1944, but eight broods of chicks were observed. These averages 3.5 young per brood. The earliest was seen on July 10, 1944, at Isaac Creek, and it was then about a week old. Downies just able to fly were noted from then until July 28 at various points along the Brazeau, Southesk, and Rocky Rivers and at Maligne Lake.

FRANKLIN'S GROUSE Canachites franklinii (Douglas)

There are records of this grouse from Jasper House in 1898 (Macoun) that almost certainly refer to the spruce grouse. Loring is supposed to have taken specimens at points 15 and 40

miles west of Henry House. Spreadborough took specimens at Mt. Edith Cavell and there is a specimen from Brazeau Lake in the Museum of Cornell University collected by James Simpson during the period September 8 to 12, 1911.

None was seen during the field work of 1941-44 but in 1946 a male was captured on Signal Mountain and released after examination.

RUFFED GROUSE Bonasa umbellus umbelloides (Douglas)

The ruffed grouse is quite common along the Miette and Athabasca Valleys, where it was recorded by Preble in 1896, Riley in 1911, Spreadborough in 1917 and 1918, and in more recent investigations by the writer. Outside of these valleys the species was found in small numbers up the Snake Indian River to Willow Creek and up the Rocky to Rocky Forks. Twenty-one birds were seen or heard between May 1 and July 31, 1944.

Breeding.-Between April 16 and 22, 1943, seven drumming cocks were heard at various points along the Miette and Athabasca Valleys. One brood of five fully fledged young was seen near Devona on September 6, 1943. In 1945 the number of cock birds on territory in the region between Devona and Miette had increased significantly. At dawn on May 8, 1945, 30 drumming birds were counted alongside the railroad right-of-way in the seven miles between these points. In 1946 the first brood of downies was seen on June 13.

WILLOW PTARMIGAN Lagopus lagopus albus (Gmelin)

Willow ptarmigan are locally present in the northern part of the park, south to Cairn Pass (Warden Macdonald) and to the Tonquin. At the latter place two pairs were nesting in July, 1931, and others were seen and photographed by Fred Brewster in May, 1944. Riley took specimens in Moose Pass at the head of the Smoky River and Spreadborough collected others in Shovel Pass.

The records consist of a wing from Topaz Shelter and specimens taken at Amethyst Lake from 22 birds seen between September 2 and 9, 1945. The 22 birds consisted of a pair with five young, a pair with six young, two hens and two cocks with two young, and a lone cock.

In 1946 an adult male was seen on Monarch Meadows on June 23.

WHITE-TAILED PTARMIGAN Lagopus leucurus leucurus (Richardson)

Found in summer on the high barren ridges in all parts of the park. In winter it descends into the valleys at some points. Riley found the species fairly common in the Moose Pass area, July 29 to August 8, 1911. The writer found it uncommon from 1943 to 1945 but quite abundant in 1946. Flocks of this species were seen in Cairn and Poboktan Passes in March, 1941.

Breeding.-A female collected on Mount Tekarra on June 28, 1944, was laying. Hens with small chicks were seen in Maccarib Pass, July 1931; Cairn Pass, July 15, 1944, and August 4, 1943; Southesk Pass, July 19, 1944; and at Little Heaven Summit, August 16, 1943.

SHARP-TAILED GROUSE Pedioecetes phasianellus jamesi Lincoln

Though not seen by the writer, this grouse is reported by wardens to occur fairly regularly in autumn at Willow Creek and to appear occasionally in many of the higher passes and prairie-like areas south to Poboktan Pass.

In September and October, 1941, there was a large influx. Supervising Warden C. J. Phillips reports that the birds became numerous in the lower Athabasca Valley. Some went up the Sunwapta but the larger number travelled towards the Chaba River and Fortress Lake, B.C., where they were seen in large numbers. There are two specimens in the National Museum of Canada, identified by Godfrey as P. p. jamesi.

There are no summer records.

*GRAY PARTRIDGE Perdix perdix (Linnaeus)

A number of these birds appeared in the park in the autumn of 1941, in company with the sharp-tailed grouse.

*SANDHILL CRANE Grus canadensis (Linnaeus)

Cranes have been seen occasionally by the park wardens, particularly in the spring of the year. In late September 1945, Dr. Lewis observed a large-scale southbound movement up the Athabasca River. The first birds were seen at 6:45 p.m. on September 21, when 11 birds appeared over Jasper townsite. On September 22 Dr. Lewis counted 132 cranes between Talbot Lake and Jasper but the greatest numbers were seen on September 23 when 370 were counted between the Athabasca Falls area and Sunwapta Pass, all in the sky and moving southward.

It seems probable that the exceptionally stormy weather in the latter part of September, 1945, had diverted the cranes from their usual migration route.

SORA RAIL Porzana carolina (Linnaeus)

This elusive bird is abundant in the sedge meadows bordering the Athabasca and Miette Rivers. It is more often heard than seen, but specimens were taken at Decoigne on June 30, 1944, and at Snaring on July 23, 1931. Others were seen at both these places, as well as at Blue Creek and Isaac Creek. In 1946 first arrivals were seen on May 21 at Talbot Lake.

YELLOW RAIL Coturnicops noveboracensis (Gmelin)

Bonaparte described two specimens from this region (Preble, 1908: 61).

AMERICAN COOT Fulica americana americana Gmelin

Despite seemingly suitable nesting territory for coot along the Athabasca Valley and at Snake Indian Lake, there are no summer records for this bird in the park.

Eight were seen near Jasper in September, 1917.

On May 6, 1944, there were four on Talbot Lake and in 1946, five were seen May 7 and May 23 on the same lake.

KILLDEER Charadrius vociferus vociferus (Linnaeus)

A regular summer visitant in small numbers to the large river valleys of the park. First arrivals were noted on April 1, 1941, at Miette. At Jasper in 1944 the killdeer was already present on May 1, when field work began. Single birds and pairs apparently on territory were seen at Willow Creek on May 25; on the open meadowland near Deer Creek on May 26; at various points along the Athabasca north of Jasper in June; between Brazeau Lake and Isaac Creek on July 10; and at Medicine Lake and Maligne Lake on July 23 and 25, 1944.

Breeding.-A pair of adults with two young was feeding at the mouth of Maligne River on Medicine Lake on July 23, 1944. Newly hatched downies were photographed at Lake Edith on May 29, 1946.

GOLDEN PLOVER Pluvialis dominica (Müller)

On September 22, 1945, Dr. Lewis identified six golden plover on the extensive mud flats by the roadside, 14 miles north east of Jasper.

BLACK-BELLIED PLOVER Squatarola squatarola (Linnaeus)

Riley states that Byron Harmon collected a specimen from several seen at Maligne Lake on September 15, 1911.

WILSON'S SNIPE Capella gallinago delicata (Ord)

Taverner records the observation of snipe in the Jasper area on September 8 and 10, 1917. These were probably on south-bound migration. The first records during the five summers of field work is of a pair seen daily at Willow Creek between May 19 and 26, 1944. A large part of each day, the male of this pair was either drumming in flight over a small area of marshy willow swamp, or crowing from a small log in its midst. In 1946, three were seen near Jasper on May 7 and 13.

ESKIMO CURLEW Numenius borealis (Forster)

The Eskimo curlew is now practically extinct and we have no way of knowing whether it ever occurred regularly in the park. There is a specimen described by Richardson as killed "on the Rocky Mountains" which presumably was part of Drummond's collection from the Jasper region.

SPOTTED SANDPIPER Actitis macularia (Linnaeus)

In 1944, the spotted sandpiper arrived at Willow Creek on May 23 and from that time was found along most of the rivers and streams and many of the ponds in all parts of the park. The records of other investigators indicate a similar distribution in earlier years.

Breeding.-Preble records a nest containing four eggs found by Loring on July 15, 1896, 15 miles south of Henry House. A nest with four eggs was found on July 9, 1930, at the base of a glacier not far from the stone alpine hut at the base of Surprise Point on the Ramparts. On July 23, 1944, pairs with partially fledged young were distributed along the north shore of Medicine Lake, about a brood per mile. Near the west end of Maligne Lake on July 25 two pairs had newly hatched young with them.

SOLITARY SANDPIPER Tringa solitaria solitaria Wilson

Early records of Preble and Spreadborough indicate that a breeding population of this species inhabited the Athabasca Valley. This does not seem to be the case now. In 1944 it was first seen on May 10, when a single bird was noted on a beaver pond near Patricia Lake. Next day seven were foraging about the same pond. The species was abundant at Willow Creek during the

third week of May and by May 26 it was estimated that at least six pairs had established territory between there and Deer Creek. Other pairs were seen at Blue Creek and Topaz Lake in late May and at Isaac Creek, Southesk Lake, and Rocky Forks in July. In the last-named area their noisy protests at the writer's presence left little doubt that they had nests or young in the vicinity.

Breeding.-Loring collected a young bird and the male parent 15 miles south of Henry House on July 19 and 20, 1896. A nest containing four fresh eggs was taken at Willow Creek on June 7, 1945.

Systematic status.-While breeding specimens belong to the subspecies solitaria the National Museum collection contains four specimens (Aug. 1-4) that are T. s. cinnamomea (Brewster).

GREATER YELLOWLEGS Totanus melanoleucus (Gmelin)

In 1930 a pair of yellowlegs was evidently nesting near Snaring Lake; during June, both birds attacked noisily whenever the writer appeared. In 1943 the only record was of a migrant at Jasper Lake on April 18. This yellowlegs was more abundant in 1944 and between May 2 and May 29, 28 were seen along the Miette and Athabasca Valleys between Decoigne and Miette, at Willow Creek, Blue Creek, and Topaz shelter. In June, single birds were seen near Snaring on two occasions. On July 10, three pairs were in noisy residence in the marshland adjacent to Isaac Creek and the Brazeau River. They were equally abundant in 1946.

Breeding.-A nest was found near the highway at Leech Lake in May 1946, by Warden Frank Wells. One addled egg from this nest is in the Carnegie Museum.

LESSER YELLOWLEGS Totanus flavipes (Gmelin)

On August 5, 1918, Spreadborough collected four specimens of this species in the park.

xSEMIPALMATED SANDPIPER Ereunetes pusillus (Linnaeus)

Large flocks of small sandpipers tentatively identified as this species were moving southward along the alplands near Cairn Pass on August 3, 1943.

xDOWITCHER Limnodromus griseus (Gmelin)

A flock of six of these birds was seen several times on a mud flat near Talbot Lake on August 9, 1950. They were quite tame but it was not possible to take specimens. Three others were seen in the same general locality by Dr. Lewis on September 22, 1945.

ESTILT SANDPIPER Micropalama himantopus (Bonaparte)

The only record is of two seen and photographed by K. T. Rogers at Snaring on August 21, 1951.

WILSON'S PHALAROPE Steganopus tricolor Vieillot

An adult pair seen repeatedly at close range at Wabasco Lake on May 13, 1946, is the only record for the park.

NORTHERN PHALAROPE Lobipes lobatus (Linnaeus)

Taverner collected specimens from a group of four seen on Cavell Lake on September 4, 1917. In 1946 a female was taken on Lake Edith on May 13 and another was seen on Talbot Lake on May 23.

HERRING GULL Larus argentatus smithsonianus Coues

Soper saw several gulls, thought to be this species, at Jasper Lake in August, 1938.

At Devona on May 9 and 10, 1944, two flocks of herring gulls, totalling 24 birds, were noted. These flew at low elevation steadily eastward down the Athabasca Valley.

In 1946 single herring gulls were seen on May 7, 16, and 24 and on June 4 and 7. An injured bird was secured on Dorothy Lake on May 24 and a juvenile at Jasper on August 23, 1946.

CALIFORNIA GULL Larus californicus Lawrence

On May 7 and 12, 1946, flocks of 50 and 26 respectively, rested on Lake Edith.

RING-BILLED GULL Larus delawarensis Ord.

A single adult bird seen at close range at Talbot Lake on May 4, 1944, was the first record of this gull in the park. In 1946, it was seen on July 28 at Maligne Lake and on Lake Edith on May 12.

SHORT-BILLED GULL Larus canus brachyrhynchus Richardson

On July 23, 1944, a full-grown juvenile short-billed gull was foraging over the flats at the confluence of Beaver Creek with Medicine Lake, while an adult floated on the lake close by. Several small gulls seen at a distance on Maligne Lake three days later were thought to be of this species. It is probably of regular occurrence in late summer during the autumn migration from its Arctic nesting grounds to the Pacific Coast.

*BONAPARTE'S GULL Larus philadelphia (Ord)

The first record of this small gull in the park is of an adult seen on Talbot Lake on May 4, 1944. It and a ring-billed gull sat side by side on a small mud bank and permitted approach to within 20 yards. However, a high wind frustrated attempts at collecting either of them. The second record was of a bird in winter plumage seen at close range on Lake Edith on May 27, 1946.

*COMMON TERN Sterna hirundo hirundo Linnaeus

At Talbot Lake on June 15 a pair of common terns circled and fed but kept apart from several black terns present at the same time. This is the only record of either species of tern in the park.

BLACK TERN Chlidonias niger surinamensis (Gmelin)

Four black terns were present over the marshy areas at the eastern end of Talbot Lake throughout the afternoon of June 15, 1944. They were not present later in the month. One was collected. In 1946 two were seen at the same place on June 3.

MOURNING DOVE Zenaidura macroura marginella (Woodhouse)

A regular summer visitant to the Athabasca Valley, casual elsewhere in the park. This dove was first recorded in the park by Spreadborough, who took a specimen on June 21, 1918.

In 1944 two pairs were nesting in the fir forest just west of Jasper village, a female was seen at Devona on May 17, and another was collected at Blue Creek on May 28. On December 23, 1944, Warden Frank Wells reported that a dove was wintering at Athabasca Falls cabin, feeding on grain in the corral and roosting under the porch roof.

GREAT HORNED OWL Bubo virginianus (Gmelin)

Horned owls were quite scarce during the summer months of 1930, 1943, and 1944. In 1944, single birds were seen or heard on Henry House Flats on June 1, 11, and 15; at Southesk Lake on July 17, and on Buffalo Prairie on December 22. In 1943 one was seen near Rocky Forks on August 4. Others were heard at Rocky Forks and Blue Creek in March and April, 1941.

A dead bird was examined at Muskeg Shelter on June 1, 1944.

During the winter of 1945-46 the horned owls in the park suffered heavy casualties from an unknown cause. During the month of May the rotting or dehydrated remains of eight of these owls were found.

Breeding.--On June 28, 1930, a pair of adults was watched feeding their young in the heavy timber north of Snaring Lake.

Breeding specimens examined were Bubo virginianus lagophonus (Oberholser). One of eight winter-killed specimens examined in May, 1946, was B. v. occidentalis Stone.

HAWK OWL Surnia ulula caparoch (Müller)

In 1896, as recorded by Preble, Loring reported it common on the route between Jasper House and Smoky River. He collected one at Henry House on October 20, 1896.

Spreadborough collected a specimen at Jasper House on June 14, 1898. Taverner records one seen by J. M. Macoun on August 27, 1917. It was not seen during the 1941-44 field work.

PYGMY OWL Glaucidium gnoma californicum Sclater

Apparently a spring migrant through the park, as it was heard at Jasper on March 5, 1941, and at Shalebanks on March 25, 1941.

On May 10, 1944, a male was collected in the spruce forest between Devona and Miette.

GREAT GRAY OWL Strix nebulosa nebulosa Forster

Preble records that Loring took one on "Stoney" (Snake Indian) River about 25 miles north of Jasper House on August 25, 1896. On October 20 of the same year he collected another at Henry House.

There are no recent records.

SHORT-EARED OWL Asio flammeus flammeus (Pontoppidan)

The only record is of an adult male seen at close range on the alplands of Signal Mountain on June 18, 1946.

NIGHTHAWK Chordeiles minor minor (Forster)

Taverner and Spreadborough found this species common in 1917 and the latter took specimens in 1918 and 1919. It is certainly not common at the present time. In 1944, from the time of its first appearance on May 24 until the end of July, only eight were seen. These were at Willow Creek and on Henry House Flats. First appearance in 1946 was on June 2.

BLACK SWIFT Cypseloides niger borealis (Kennerly)

Taverner records this species as seen in 1917 on July 29 and August 6, and took specimens on the latter date. In 1944 one seen at Henry House Flats on June 23 was the sole record. Several birds were circling over the Athabasca River below Jasper on June 13, 1946.

*VAUX SWIFT Chaetura vauxi (Townsend)

Seen only along Berg Lake on August 31, 1943.

RUFOUS HUMMINGBIRD Selasphorus rufus (Gmelin)

The first hummingbird seen in 1944 was at Takarra Creek on May 14. No others were noted until June 3, when five or six were feeding on flowering shrubs in Jasper. From then on they were seen daily in Jasper. Others were seen at Brazeau Lake, Cairn Pass, and Rocky Forks. Specimens were taken by Spreadborough in 1918 and 1919. Abundant in the Athabasca and Maligne Valleys in late May and June, 1946.

*BELTED KINGFISHER Megaceryle alcyon (Linnaeus)

The kingfisher is distributed mainly along the Athabasca Valley and up the Snake Indian as far as Willow Creek. Doubtless occasional individuals occur elsewhere from time to time. The early reports of Loring, Taverner, and Spreadborough indicate a similar distribution in 1896, 1898, and 1917. Kingfishers arrive early, as they were present at Decoigne on May 2, 1944, when field work began. The latest autumn record is that of one seen at Snaring on September 22, 1945 by Dr. Lewis. The subspecies involved has not been ascertained.

Breeding.-An occupied nest burrow was examined at Talbot Lake on June 14, 1944.

YELLOW-SHAFTED FLICKER Colaptes auratus borealis Ridgway

Preble states that Loring reported it breeding in 1896, 15 miles south of Henry House and he found it along the trail between Jasper House and the Smoky.

Taverner records three taken on July 27, 1917, all showing signs of hybridization with the red-shafted flicker.

In 1944 yellow-shafted flickers were seen only at Willow Creek and at Shalebanks. In 1946 they were seen at several points along the Athabasca Valley.

RED-SHAFTED FLICKER Colaptes cafer collaris Vigors

Red-shafted flickers were found to be numerous in all parts of the park visited in 1943 and 1944. The first arrivals of 1941 were noted on April 7 and April 9. In 1943 they were seen daily from April 18 on.

Breeding.-A nest with eggs was examined at Decoigne on May 12, 1944. Others were seen at Shalebanks and Willow Creek in mid-May. At Topaz Shelter on May 31 a pair of birds was feeding young in a low stub near the cabin. On July 23 at Medicine Lake some young were still in the nest.

PILEATED WOODPECKER Dryocopus pileatus abieticola (Bangs)

Seen near Snaring Lake on July 23, 1930, and near Jasper on March 5, 1941.

The observations suggest that this woodpecker is almost confined to the Athabasca Valley from Jasper east and there frequents the Douglas fir forests in preference to other habitats. In this general region in 1944, eight pileated woodpeckers were seen under circumstances suggesting that they were different birds. One seen at Blue Creek on May 27 was the only record outside the Athabasca Valley.

This species is resident through the year and was seen in the fir forests near Jasper on December 22, 23, and 28, 1944.

LEWIS'S WOODPECKER Asyndesmus lewisi (Gray)

This species was described to Clarke by Warden Frank Wells as of occasional occurrence at Jasper. In 1933 or 1934 a pair nested in a tall fir stub near Jasper Park Lodge. In 1946 a pair nested in a broken live fir at the north end of Lake Edith and another pair near Snaring station; the latter pair arrived on its territory May 13 and the nest contained five fresh eggs on June 19.

HAIRY WOODPECKER Dendrocopos villosus septentrionalis (Nuttall)

Specimens have been collected near Jasper by Riley, Taverner, and Spreadborough on dates varying from June 23 to September 11. In 1930 it was seen and specimens taken at Snaring.

During the field season of 1944 only 20 were seen but these were widely distributed at various points along the Miette and Athabasca Valleys, as well as at Shalebanks, Willow Creek, Blue Creek, and Rocky Forks. In December it was a scarce resident in the fir forests and aspen groves of the Athabasca Valley.

Breeding.--On May 17, 1946, a pair had newly hatched young in a nest excavated in a dead poplar in the middle of a beaver pond near Jasper.

Systematic status.--Three specimens were taken, two in May and one in December.

One of these, a female taken in December, is of the race monticola, the other female is intermediate between this race and septentrionalis. The single breeding male is as large as the largest septentrionalis available for comparison and, though it has less white on the wing coverts than the mean of that race, it is best referred to it.

Godfrey (letter Nov. 25, 1953) states that three specimens in the National Museum collection are nearer septentrionalis than monticola. Riley (1912) on the other hand refers his two specimens to monticola. Jasper Park appears to be in the area of integration between these two races.

DOWNY WOODPECKER Dendrocopos pubescens leucurus (Hartlaub)

The downy woodpecker was not seen anywhere in the park during the summer months but in December, 1944, three were seen at Devona, Jasper, and Buffalo Prairie and a specimen was taken. In each instance the bird was foraging in the aspen parkland.

Systematic status.--The single specimen is clearly referable to Dendrocopos pubescens leucurus both on criteria of size and on the virtual absence of white marking on the wing coverts. The only point of difference from the mean of that race is in the slightly more pronounced black barring on the rectrices.

ARCTIC THREE-TOED WOODPECKER Picoides arcticus (Swainson)

Preble records one collected by Loring at Henry House on October 4, 1895. In 1941 birds of this species were seen at Brazeau Lake on March 17, and at Devona on March 23 and April 8. None was seen in 1943 or 1944 but on May 23, 1946, a single bird was watched among the spruces on the south shore of Talbot Lake.

AMERICAN THREE-TOED WOODPECKER Picoides tridactylus fasciatus Baird

This is the most abundant and widespread woodpecker in the park, probably because its chosen habitat - the spruce forest - has the widest distribution of any forest type.

Loring found it common in 1895-96 and took specimens at and near Henry House, Jasper House, and the Snake Indian River.

In 1941 it was recorded as abundant and widespread but in 1944 its numbers had decreased and only 12 were seen during the three summer months. Most of these were along the Snake Indian and Miette Rivers and only one was seen on the south boundary trail.

During the winter this species makes a small altitudinal migration to become the most abundant woodpecker in the fir forests of the Athabasca Valley near Jasper. None was seen in this forest association in the summer months.

EASTERN KINGBIRD Tyrannus tyrannus (Linnaeus)

The absence of records of this bird from the notebooks of all the earlier biologists to visit Jasper Park suggests that the kingbird was then at least very scarce. The sole early record is of a bird collected by Spreadborough on July 31, 1917.

In 1944 it was quite common along the Athabasca River from Talbot Lake eastward. Here seven were seen on June 5 and four others on June 15. These birds appeared to be mated pairs on nesting territory but positive evidence of nesting was not secured. Abundant along the Athabasca Valley from Jasper to Pocahontas in June, 1946.

WESTERN KINGBIRD Tyrannus verticalis Say

One seen at close range near Snaring on June 29, 1930, is the only record for the park. Jasper is well north of the normal range of the species and this bird should be regarded as a vagrant.

EASTERN PHOEBE Sayornis phoebe (Latham)

The first record of this bird in the park was that of one seen at very close range around the corral at Devona on August 13, 1943.

In 1944 three pairs, and in 1946 one pair, were active around some abandoned mine buildings at Miette on May 11 and two were taken. On May 16, 1944, a pair was noted at Devona, where they appeared to be preparing to nest in the canyon of the Snake Indian River, close by.

SAY'S PHOEBE Sayornis saya saya (Bonaparte)

This bird is a rare summer visitant and migrant in the park. Two were taken by Spreadborough in 1918, one on June 21 and another on July 9. In 1930 it was seen once only, at Snaring

on June 29. Again in 1943 there was but a single record, in Jasper village on September 8. One was seen at Miette in May, 1945, and another at the same place on June 12, 1946.

TRAILL'S FLYCATCHER Empidonax traillii traillii (Audubon)

This species was found to be a fairly common summer visitant to the willow thickets along the Athabasca Valley and up the Snake Indian as far as Willow Creek. It was particularly numerous along the shore of Talbot Lake. In 1944 the first individuals were noted on May 11. Spreadborough took five specimens in 1918 and 1919.

LEAST FLYCATCHER Empidonax minimus (Baird and Baird)

No specimens were collected in 1943 or 1944, but the unmistakable call notes of this species were heard at many points along the Snake Indian River from Willow Creek to Devona on June 1 to 3, 1944, and again at Jasper on June 5 and 26. Spreadborough collected a specimen on July 7, 1919. The writer took specimens at Sunwapta Falls and Buffalo Prairie in July, 1945.

HAMMOND'S FLYCATCHER - Empidonax hammondi (Xantus)

Spreadborough collected several specimens in the park in 1918 and 1919. Small flycatchers seen at widely scattered points in the timbered areas of the park in 1943 and 1944 were almost certainly of this species but as specimens were not taken, identity remains uncertain. On the basis of these observations this flycatcher is apparently a fairly common summer visitant to the lower timbered areas of the park, along the Miette, Athabasca, Snake Indian and Brazeau River Valleys.

WRIGHT'S FLYCATCHER Empidonax oberholseri Phillips

Small flycatchers, presumably of this species, were fairly common in the willow thickets and aspen groves of the Athabasca Valley in 1944 and 1946. The first seen (specimen taken) was on May 16, 1944, in the riverside willows at Henry House Flat.

Spreadborough collected five in 1917 and others in 1918.

Breeding. - On July 25, 1917, Spreadborough found a nest with four young.

WESTERN WOOD PEWEE Contopus richardsonii richardsonii (Swainson)

From its arrival on June 5, 1944, this was the most abundant flycatcher in all parts of the Athabasca Valley as far up-river as Mile 27 on the Jasper-Banff Highway. Two or three

pairs were constantly in attendance at the Jasper garbage dump and it was particularly numerous along the edge of Talbot Lake.

OLIVE-SIDED FLYCATCHER Nuttallornis borealis (Swainson)

This bird is not abundant, but scarcely a day goes by while riding the trails of the park without at least one being heard. In 1944 first arrivals reached Blue Creek on May 28 and the species was tallied daily thereafter until return to the Athabasca Valley. It was virtually absent from the Parkland faunal area but was found again during July on Poboktan Creek and at Brazeau Lake, Cairn Pass, Southesk Lake, and the headwaters of the Rocky.

A specimen was taken in Tonquin Valley on July 16, 1930. Loring found the species common 15 miles south of Henry House in 1896. Spreadborough took specimens in 1918 and 1919.

Breeding.—Four young, just out of the nest, were seen at Cavell Lake on July 1, 1944.

HORNED LARK Eremophila alpestris arctica (Oberholser)

Wherever large stretches of alpland were visited during the summer months, pairs of horned larks were found scattered over the higher ridges. In July, 1930, they were common in the Tonquin Valley and specimens were taken. Taverner records a number seen near Mount Edith Cavell on August 28 and 31, 1917. Ten were counted on the slopes above Mowitch Creek on August 17, 1943. They were less common on Poboktan Pass and Cairn Pass in July, 1944, and were not seen on Southesk Pass. On Mount Tekarra five pairs were noted June 28, 1944.

Early in the year and during unseasonable snowstorms the larks descend into the valleys. Under such circumstances a specimen was taken on June 15 at Talbot Lake and 30 were counted on May 25 on the flats at Willow Creek.

VIOLET-GREEN SWALLOW Tachycineta thalassina lepida Mearns

This is another species that seems to have changed its status in recent years. The only early record of it is that of Macoun, who states that Spreadborough observed a few at Henry House in July, 1898.

In 1943 and 1944 it was found to be fairly common along the Athabasca Valley and up the Snake Indian River. It arrived in Jasper on May 5, 1944, and became common the following day. On May 16, 17, and 18 it was seen at Devona, Shalebanks, and Willow Creek. In June it was present around Jasper and Snaring in numbers about equal to those of the tree swallow.

Breeding.--Two pairs had nests in abandoned flicker nests in some beaver-drowned spruce 10 miles north of Jasper on June 25, 1944. Though specimens were not taken, these birds were very tame, coming repeatedly to the nests to feed their young within 10 feet of the observer. Identity is certain.

TREE SWALLOW Iridoprocne bicolor (Vieillot)

Spreadborough's reports of 1898, 1917, and 1919 leave little doubt that the tree swallow was then an abundant summer resident. It is an early arrival, first noted in Jasper on April 17, 1943, on which date five pairs were in the vicinity of nesting sites. It was seen daily near Jasper and down the Athabasca in May and June, 1944, and was common at Willow Creek and Blue Creek in late May. None was seen in the Brazeau Valley.

Breeding.--Many nests were noted in Jasper village in June and birds were seen entering nesting holes in beaver-drowned spruce at Snake Indian Lake on May 28 and at Talbot Lake on June 15.

ROUGH-WINGED SWALLOW Stelgidopteryx ruficollis serripennis (Audubon)

Specimens were collected by Spreadborough in June 1918, and June, 1919, but there is nothing to indicate the status of the species at that time.

In 1944 it was not common. It appeared first on May 3 but only seven birds were seen during the month. In June a colony of five or six pairs was found at Talbot Lake and another of about the same size at the sulphur springs on the highway near Snaring.

Breeding.--Incubation was in progress on June 15, 1944, at the two colonies mentioned above. Nests were in burrows close under the upper rim of roadside cutbanks. No burrows of this species were noted less than eight feet above the road level. Nest building in a cutbank near Decoigne was watched on May 31, 1946.

BANK SWALLOW Riparia riparia riparia (Linnaeus)

A pair of swallows of this species was seen at Shalebanks on August 14, 1943. In 1944 a colony of 12 to 15 pairs was discovered in a roadside cutbank near Talbot Lake. Here a specimen was collected on June 5. Another colony was discovered in a railway cutbank near Devona on June 4, 1946.

Breeding.--Incubation was apparently in progress on June 15 but the burrows were so deep that examination of nests was not made. One burrow was opened to a depth of four feet with no sign of the nest yet in sight. This colony occupied some very low cut-

banks where most of the nests were within four feet of the lower ground surface, some barely two feet from road level. The soil was sandy and digging easy. The colony was scarcely 400 yards from a colony of rough-winged swallows, but there was no intermixing of the nest burrows of the two species.

The Devona colony had fresh eggs on June 4, 1946.

BARN SWALLOW Hirundo rustica erythrogaster Boddaert

Spreadborough found this species common from Edmonton to Yellowhead Pass in June, 1898.

On June 21, 1918, he collected a barn swallow in the park for the National Museum of Canada. Barn swallows were not seen during the years 1943 to 1946.

CLIFF SWALLOW Petrochelidon pyrrhonota hypopolia Oberholser

This bird apparently does not nest in the park but there is a heavy autumn migration down some of the north-south valleys. Thus on August 7, 1943, a flock of ten was seen as they flew rapidly down Mowitch Creek. Two days later, at Topaz Shelter on Blue Creek, over 100 birds were counted and an even greater number passed overhead on the following day.

There is a specimen record for the park, July 18, 1919, and another for Christine Lake, May 30, 1946.

CANADA JAY Perisoreus canadensis (Linnaeus)

This is the most universally distributed species in the park. It is resident and common through all the forested and semi-forested areas from the lowest elevations of the Athabasca Valley to timber-line.

Breeding.--Apparently breeds wherever found. This well-known early nester has its young out of the nest by early May. Between May 15 and 21, 1944, many family groups were seen along the Snake Indian River. In one of these, seen on the latter date at Willow Creek, the young were still bobtailed, and were noisily demanding and getting food from their parents.

Systematic status.--The Canada jays of Jasper Park do not fall unequivocally into any of the several named subspecies that impinge upon this part of the Rocky Mountains but in colour of the underparts and distribution of the dark pigment on the crown and auricular area the breeding population is nearest P. c. pacificus (Gmelin). Neglecting a decision upon whether or not

the race P. c. connexus Aldrich is valid as distinct from P. c. bicolor Miller, the Jasper specimens differ from those inhabiting the area assigned to connexus in having the ventral colour generally paler, and less white on the head and face.

Two December-taken specimens from Devona are referable to P. c. albescens.

Existing evidence suggests that there is some movement of albescens westward into the mountains in midwinter at the same time that the magpies enter. The darker coloured resident population, while its affinities are predominantly northern, shows some possible signs of gene flow into the area from the south.

STELLER'S JAY Cyanocitta stelleri annectens (Baird)

This species is not at all common in the park but seems to remain throughout the year.

Riley took a specimen at Henry House on September 9, 1911; Taverner records another on September 4, 1917, near Mount Edith.

Two birds seen at Hunter Creek near the Jasper-Banff Highway on May 5, 1944, were the only ones seen.

Warden Frank Wells reported that it occasionally came into Jasper village during the winter.

MAGPIE Pica pica hudsonia (Sabine)

Apparently the magpie is a new arrival in the park, as there is no mention of it in the earlier reports. It was first observed in the lower parts of the Athabasca Valley in March, 1941. In 1954 the only birds seen were two at the mouth of Fiddle Creek on April 17. In 1944 it was present near Jasper when field work began. Two were seen near Devona on May 3 but no others until June. At various times during the latter month one or two birds were seen on Henry House Flats.

In December 1944, it was one of the commonest birds in the Athabasca Valley, as many as 18 being seen in a single day.

Breeding.—On June 18, 1944, a nest containing well grown young was found in a dense clump of willows on the river bank near the old crossing at Henry House Flats. The young had left the nest by June 26.

RAVEN Corvus corax principalis Ridgway

The raven was quite scarce in the park area at the time of the investigation and there was no indication that it was ever much more numerous.

Preble states that in 1896 Loring observed ravens just west of Henry House and in the mountains between Jasper House and Smoky River.

Ravens were seen on April 5, 1941, between Blue Creek and Willow Creek and there, too, on May 19, 25, and 28, 1944, were noted the only ravens seen that summer. Six were seen at Devona on December 26, 1944.

In December, 1946, ravens invaded the park in large numbers and gathered in flocks upon the carcasses of any dead game animals. None of the residents of Jasper remembered this happening before.

AMERICAN CROW Corvus brachyrhynchos Brehm

The crow population of Jasper Park is centred along the Athabasca and Miette Valleys with smaller numbers at Blue Creek. In the main valley they are abundant, but apparently no more so than in earlier years.

Spreadborough, in 1917, saw one flock of about 150 birds, about as many as in the largest flock seen during more recent field work. On August 12, 1943, almost 100 crows were counted in a flock near Jasper Lake. This was a post-breeding concentration, as was, in all probability, the flock seen by Spreadborough.

The crow is one of the earliest of spring arrivals. It was noted commonly around Jasper village on March 21, 1941. One was seen at Blue Creek on March 29, and another heard at Willow Creek on April 7 of the same year.

In 1944 at least three pairs were preparing to nest at Snake Indian Lake, where they were seen on May 26 to 28.

A single bird near Isaac Creek on July 10, 1944, was the only one seen in the Brazeau Valley.

Breeding.--Several nests containing large young were noted at Talbot Lake on June 15, 1944.

Systematic status.-Specimens examined agree with Corvus brachyrhynchos hesperis Ridgway except in having wing length slightly beyond the maximum for that race. In this respect they approach C. b. brachyrhynchos Brehm.

CLARK'S NUTCRACKER Nucifraga columbiana (Wilson)

This bird is apparently less common now than formerly. Loring in 1895 and Spreadborough in 1919 saw considerable numbers and collected several. In March, 1941, it was common in Jasper and at Dolly Varden Lake on the Snake Indian River. However, in 1943 and 1944 it was rare. In the latter year, during two and a half summer months, much of the time at and above timber-line in the habitat of this bird, only three were seen, one on Mount Wilcox on June 25, one at Poboktan Pass on July 4, and one at Maligne Lake on July 24. In December it was abundant in all parts of the Athabasca Valley.

BLACK-CAPPED CHICKADEE Parus atricapillus septentrionalis Harris

A widely distributed resident species that has varied greatly in numbers, possibly according to winter conditions.

Loring found it common near Henry House in both July and October, 1895. In 1911 Riley noted it only as occasionally found, while in the years 1917 to 1919 Taverner and Spreadborough found it not common.

During field work from 1941 to 1945 it was scarce. In March and April, 1941, it was observed at Jasper, Waterfall Cabin, and Shalebanks. In 1944 only 16 were seen, at Jasper, Devona, Willow Creek, Isaac Creek, and Medicine Lake.

GAMBEL'S CHICKADEE Parus gambeli grinnelli (van Rossem)

Though all observers who worked in the park have seen or taken this species, it seems to have been consistently scarce. Published records are from 15 miles west of Henry House, Miette River, and Henry House.

In March, 1941, this species was seen at Jasper, Waterfall Cabin, Brazeau Lake, Poboktan Pass, Blue Creek, and Topaz Shelter, indicating a wide distribution. Possibly the very hard winter of 1942-43 accounts for its rarity after that time. None was seen in 1943 and only three small flocks in 1944, one at Poboktan Pass on July 6 and two at Jasper on December 19 and 22. On the other hand the species was common near Jasper in May and June, 1946.

Breeding.-A nest containing newly hatched young was examined near Lake Edith on June 2, 1946. Later, on June 30, the same nest contained five partly incubated eggs.

BROWN-HEADED CHICKADEE Parus hudsonicus columbianus Rhoads

An abundant species in all parts of the park, from 1943 to 1945, perhaps more numerous in the spruce and spruce-pine forests than in other habitats. Quite scarce in 1946 when it was confined practically to the spruce forests.

Breeding.-A female at Devona on April 18, 1943, had laid part of its clutch. At Swiftwater Creek a nest containing fresh eggs was found on June 18, 1930. It was in a hole in a decaying spruce stump, five feet from the ground.

RED-BREASTED NUTHATCH Sitta canadensis Linnaeus

A resident species, subject to the same violent fluctuations in numbers as the chickadees. At present it is widely distributed but scarce. In earlier years it was noted as common in 1895 and 1898. The records of Riley, 1911, and Spreadborough, 1917 and 1918, indicate that the species was fairly common in those years.

One bird heard at Blue Creek on August 22, 1943, was the sole record for that year. In 1944 it was somewhat more numerous and eight were seen along the Athabasca Valley, at Willow Creek and at Medicine and Maligne Lakes between May and August, and several small groups were noted in the fir forest near Jasper in December. At that time they were usually part of mixed flocks, including one or more species of chickadees.

Breeding.-On June 13, 1944, four miles north of Jasper, a nuthatch was found excavating a nest cavity at the top of a decaying fir stump. Probably as a result of disturbance the nest was abandoned before eggs were laid.

BROWN CREEPER Certhia familiaris montana Ridgway

The creeper is a very scarce resident in the forested areas of the park. The first record was that of one seen near Topaz shelter on March 31, 1941. During 1943 and 1944 it was encountered once only. On July 23, 1944, in a heavy stand of spruce just below Beaver Lake, a family group of five or six birds was seen and one specimen, a juvenile, taken.

DIPPER Cinclus mexicanus unicolor Bonaparte

Scattered pairs and single birds are distributed along many of the larger rivers of the park. In winter they are confined to areas where open water is available.

In 1941 dippers were seen in March and April on the Athabasca, Rocky, Cairn, Brazeau, Snake Indian, and Blue Rivers. The same streams, and also Southesk River and Maligne River, had summer populations in 1944.

Breeding.-On June 12, 1946, a dipper was feeding young in a nest near the lower end of Maligne Canyon.

*WINTER WREN Troglodytes troglodytes Linnaeus

This wren is apparently scarce in the park and the earlier records do not suggest that it has ever been much more numerous than it is now. Thus Loring saw only single birds at Jasper House and Henry House in 1895. Riley records just one seen at the head of the Smoky on July 31, 1911.

During field work by the writer one was heard at Dolly Varden Lake on April 2, 1941 and another six miles west of Jasper on April 20, 1943. In 1944, 12 birds were seen or heard at various points between Jasper and Decoigne, at Waterfall cabin, Isaac Creek Southesk Lake, Rocky Forks, and the head of Maligne Lake. No specimens from Jasper Park are available and the subspecific status remains to be determined.

*ROCK WREN Salpinctes obsoletus obsoletus (Say)

Loring's sight record of a rock wren at Jasper House in the early autumn of 1895 had remained unsubstantiated for so long that doubts of its authenticity existed. However, on June 28, 1944, a pair of these wrens was found occupying a large rock slide just below the lookout tower on Signal Mountain. Both birds were very wild but were seen repeatedly. The male sang at frequent intervals through a period of about two hours, during which they were under observation. On July 4, 1945, another pair was found in a rock slide on Buffalo Prairie and on June 5, 1946, the song of this species was heard coming from a rock bluff near Snaring station.

ROBIN Turdus migratorius migratorius Linnaeus

The robin is found in all parts of the park, from the lowest elevations to timber-line. In 1941 the first robins were seen at Devona on March 23, though they were reported earlier at Jasper. From that time onward they were seen at all points free of snow.

The unseasonable snowfall on July 5, 1944, caused losses among nestling robins of the higher altitude populations. At Poboktan Pass all young of a nest near camp perished during July 6, though they were full fledged and ready to leave the nest.

Breeding.-A nest containing three eggs was seen at Blue Creek on May 31, 1944. Juveniles out of the nest were seen for the first time on June 15, 1944, at the elevation of Jasper.

VARIED THRUSH Ixoreus naevius meruloides (Swainson)

An uncommon summer visitant to the park, noted first at Blue Creek on April 3, 1941, and at Shalebanks on April 6 and 7. Along the Miette River it was found to be fairly common in April and May, 1943 and 1944; four were seen there on April 20, 1943. Sixteen were seen during the 1944 field work, 10 at Willow Creek after the May 21 snowstorm, others at Cavell Lake and Blue Creek. Fairly common at Medicine Lake in early June, 1946.

HERMIT THRUSH Hylocichla guttata faxoni Bangs and Penard

A fairly common summer visitant to timber-line habitats throughout the park. It occurs at lower elevations during the spring migration. First noted in 1944 on May 5. In 1943 and 1944 it was seen at all points visited in its chosen habitat. Some birds that perished during the heavy snowstorm of May 21 were found as the snow melted.

OLIVE-BACKED THRUSH Hylocichla ustulata swainsoni (Tschudi)

A common migrant and summer visitant to the lower elevations throughout the park. Spreadborough took specimens on each of his visits. This is a much later migrant than the hermit thrush and was first seen in 1944 at Willow Creek on May 21. The heavy snowstorm of that date killed great numbers of these birds. Six dead birds were picked up along the trail within a mile of camp and others in the last stages of exhaustion from starvation were seen all over the area.

Summer records in 1944 are from many points along the Athabasca Valley, the Rocky River, and at Brazeau Lake and Medicine Lake.

Breeding.-Two broods of young just out of the nest were seen near Grizzly Shelter on the Rocky River on July 22, 1944.

MOUNTAIN BLUEBIRD Sialia currucoides (Bechstein)

An abundant spring and autumn migrant through the park. Summer resident in the Athabasca Valley in fair numbers, less numerous elsewhere.

Riley records this species at Jasper House on July 6, 1911, and at Henry House on July 8 and September 7. Taverner and Spreadborough found it common in the same area in 1917, 1918, and 1919 and the former saw a large flock at Jasper on September 11, 1917.

In 1941 bluebirds appeared at Devona on March 23, but none was seen up-country until April 3, when they came to Blue Creek. In 1944 migrants were passing through the Jasper area until mid-May at least and at Willow Creek were common from May 21 to 25.

The only bluebirds seen on the south boundary trip in 1944 were three at Cairn Pass on July 15.

Breeding.-A pair nested in a building in Jasper and was seen feeding young on June 26, 1944. A nest with fresh eggs was found near Lake Edith on May 26, 1946, and several other nests were found in various parts of the Athabasca Valley during the last two weeks of May.

TOWNSEND'S SOLITAIRE Myadestes townsendi townsendi (Audubon)

The solitaire is very abundant in parts of the park during some summers. For example, Macoun states that Spreadborough in 1898 found it everywhere about the Jasper area. Again in April, 1943, it was the most frequently heard songster in the vicinity of Jasper, and 15 singing males were tallied on April 18, between Jasper and Devona. In 1917 Spreadborough saw or took 15 in Jasper Park and the species was apparently not very abundant. Similarly in 1944 solitaires, though seen at widely separated parts of the park and in fair numbers, were less abundant than in the previous year. Locality records are at various points along the Athabasca and Snake Indian Valleys and up Blue Creek to Topaz Lake, also at Cavell Lake, Poboktan Pass, Isaac Creek, and Cairn and Southesk Passes.

Two birds seen at Miette by J. Hatter on December 23, 1944, furnish the only winter records for the park.

In 1941 first arrivals were noted at Blue Creek on April 3.

Breeding.-Macoun states that Spreadborough collected eggs in Yellowhead Pass on July 13, 1898. This was a very late nest, as on Mount Bourgeau, in Banff National Park, a nest full of young was found on June 9, 1944.

GOLDEN-CROWNED KINGLET Regulus satrapa olivaceus Baird

Abundant in the spruce forests throughout the park. Less common in the fir and aspen stands of the Athabasca Valley and the Brazeau Valley. This species was observed at Waterfall Cabin on March 19, 1941, and from March 28 it was common at Blue Creek, Topaz,

Willow Creek, Shalebanks, Devona, and Miette. In December it was seen on three occasions, at Moberly Flats, Rocky River, and Jasper, and one specimen was taken.

RUBY-CROWNED KINGLET Regulus calendula calendula (Linnaeus)

An abundant summer resident at elevations above that of the Athabasca Valley floor. Present in the valley through the summer and common there during migration. The earliest record is that of one heard singing at Devona on April 9, 1941. In May, 1944, it was very abundant along the Miette and Athabasca Valleys, but only 10 were recorded on the floor of the latter valley in 23 field days in June. Dr. Lewis recorded six individuals in the vicinity of Jasper on September 22, 1945.

Breeding.-A brood of nestlings was seen at Maligne Lake on July 25, 1944.

WATER PIPIT Anthus spinoletta pacificus Todd

This is the most abundant summer bird on the alpland areas of the park and is seen in the Athabasca Valley in some numbers during migration.

On May 12, 1944, a flock of 30 was seen at Miette. At Willow Creek, following the snowstorm of May 21, large flocks of pipits came down into the valley bottom. The largest concentration seen was a flock of some 200 on the alplands near Topaz Lake on August 22, 1943.

Breeding.-A nest containing five eggs was found in Maccarib Pass on July 4, 1930, and another near Amethyst Lake two days later.

BOHEMIAN WAXWING Bombycilla garrulus pallidiceps Reichenow

A regular and widespread summer visitant to the park. If it does not stay through the winter it returns very early in the spring, as it was observed at Brazeau Lake, Poboktan Pass, Devona, Shalebanks, and Blue Creek in March, 1941.

There are summer records from Jasper House (Riley, 1911) and Maligne River (Spreadborough, 1917) and it was noted in 1943 at Shalebanks on August 14 and at Topaz Shelter on August 19. In 1944 summer records were from the same localities and at Brazeau Lake on July 9, Isaac Creek on July 10, and Maligne Lake on July 25. In all 65 birds were seen that summer.

In December flocks of 30 or more were noted at the mouth of the Rocky and on Buffalo Prairie. They were feeding on the berries of the mountain juniper, Juniperus scopulorum, and bearberry, Arctostaphylos Uva-ursi.

CEDAR WAXWING Bombycilla cedrorum Vieillot

Recorded by Loring as common at Henry House in 1895 and at Jasper by Taverner in 1917. This species was not abundant in 1944, when, from its first appearance on June 4 until July 31, only 24 were seen. All the records are for the Athabasca Valley except for five seen along the Rocky near Grizzly Shelter on June 21. Soper, however, saw a number at Athabasca Falls and along the Miette Hot Springs Road in August, 1938.

RED-EYED VIREO Vireo olivaceus (Linnaeus)

On July 2, 1918, Spreadborough collected a specimen of this species in the park.

In 1944 one was seen between Shalebanks and Willow Creek on May 19, another at Blue Creek on May 28, and three near Jasper on June 27. It was uncommon but widely distributed on the valley floor near Jasper in late May and June, 1946.

WARBLING VIREO Vireo gilvus swainsonii Baird

Not common and as a summer visitant practically confined to the Athabasca Valley. Taverner saw four at Jasper in September, 1917, and collected one. In 1944 it was first seen at Jasper on May 6 and during that month 12 were seen, all but one between Jasper and Willow Creek. That one was at Blue Creek on May 28. In 1944, nine were seen in the Athabasca Valley in June and on July 21 one was observed at Rocky Forks. Abundant near Jasper in 1946.

TENNESSEE WARBLER Vermivora peregrina (Wilson)

The paucity of earlier records suggests that this warbler was scarce at that time. Taverner records a female taken at Jasper on July 27, 1917, and in 1918 and 1919 Spreadborough took a total of three specimens.

In 1944, 1945, and 1946 it was found to be one of the most abundant warblers in the Athabasca Valley. On June 15, 1944, 20 singing males were tallied between Snaring and Pocohontas. Outside the main valley the species was seen at Deer Creek on May 25, at Shalebanks on June 2, and at Brazeau Lake cabin and Rocky Forks on July 10 and 21 respectively. Two specimens were taken.

ORANGE-CROWNED WARBLER Vermivora celata orestera Oberholser

In 1944 this was a common migrant during May and a small summer population remained in the Athabasca Valley. In 1896 it was reported by Loring to be common in poplars along streams north of Jasper House. Taverner took specimens at Jasper on July 25 and at

Mount Edith Cavell on September 6. Spreadborough took specimens in all months from June to September, 1918. In 1945 three were seen in Jasper on May 7 and Dr. Lewis saw three there on September 22.

YELLOW WARBLER Dendroica petechia amnicola Batchelder

This appeared to be one of the rarest warblers in 1943 and 1944. In the latter year it was first seen at Willow Creek on May 22 and 23, on each of which days single birds were noted. In June, four individuals were seen at points along the Athabasca Valley. Five specimens taken by Spreadborough in June and August, 1918, suggest that it may have been more abundant then.

MAGNOLIA WARBLER Dendroica magnolia (Wilson)

Not previously reported from the park but now known on the basis of two males seen at Blue Creek on May 28 and 31, 1944, one of which was taken. The species was seen again at Miette on June 3, 1946.

CAPE MAY WARBLER Dendroica tigrina (Gmelin)

At Miette, on June 3, 1946, a singing male was seen repeatedly at distances as close as 30 feet by the writer and two other observers, each with binoculars.

MYRTLE WARBLER Dendroica coronata coronata (Linnaeus)

An abundant migrant and summer visitant throughout the forested areas of the park. In 1944 the main northward migration of this species took place almost two weeks later than that of the Audubon's warbler. The height of the movement occurred between May 18 and 31.

Summer records are of carefully identified singing males seen at various points in the Athabasca Valley throughout June, and at Cavell Lake, Poboktan Creek, Brazeau Lake, and Southesk Lake in July.

Systematic status.—The characteristics supposedly separating D. c. coronata from D. c. hooveri are extremely variable and the two specimens available from Jasper Park can be placed in either series as regards wing length. In tail length, however, they belong with the eastern subspecies and on this basis the Jasper birds are tentatively assigned to D. c. coronata.

AUDUBON'S WARBLER Dendroica auduboni auduboni (Townsend)

First arrivals were noted at Devona on April 19, 1943. In 1944 the height of the migration was reached during the first two weeks in May. The much smaller population remaining seemed

to occupy breeding territories. Singing males were identified at Henry House Flats in late June, and at Poboktan Cabin, Brazeau Lake, and Isaac Creek in July.

August, 1943, saw a heavy migratory movement through the park, during which, at Topaz Shelter and Blue Creek between August 19 and 21, over 150 birds were counted. Between September 19 and 23, 1945, Dr. Lewis counted 66 of these warblers.

The close similarity between this and the next preceding species at times seemed to confuse both species. In May 14, 1944, on Buffalo Prairie both were in song and one violent courtship melee involved a male and a female myrtle and two male Audubon warblers. A possible consequence may be seen in specimens of myrtle warblers with traces of the yellow throat of the Audubon taken by Taverner at Cavell Lake.

Breeding.-On May 17, 1944, a pair of Audubon warblers was carrying nest material to a large spruce near Shalebanks Cabin. At Henry House Flats on June 26, 1944, young birds just out of the nest were being fed by both parents.

BAY-BREASTED WARBLER Dendroica castanea (Wilson)

A single male seen at close range through 6x binoculars at the outlet of Pyramid Lake on June 6, 1946, is the only record for the park.

TOWNSEND'S WARBLER Dendroica townsendi (Townsend)

There are no breeding records for the park but Taverner records autumn specimens from Jasper and Mount Edith Cavell on September 8 and 6 respectively, 1917.

During the recent field work the species was seen by the writer on three occasions. A male was taken at Willow Creek on May 21. Another was seen at Shalebanks on June 2 and the third near Jacques Lake on July 22, all in 1944.

BLACK-POLL WARBLER Dendroica striata (Forster)

First recorded for the park in 1944, this species was not uncommon during May and remained through the summer in small numbers. It was first seen at Willow Creek on May 21 and was quite common along the trail between Blue Creek and Shalebanks on June 1 and 2, when 19 singing males were counted along the 30 miles of trail. Singing males were later heard at Athabasca Falls (June 11) and at Waterfalls Cabin (July 3) as well as at Minnow Lake on June 21 and 27, 1946.

NORTHERN WATER-THRUSH Seiurus noveboracensis notabilis Ridgway

Spreadborough took specimens of this bird in the park in 1917 and 1918 but other early investigators do not mention it. In 1944, 17 were seen at Willow Creek along the creek north of the cabin between May 22 and 25. In June, 12 were seen along the Athabasca River, where they occupied the willow and dogwood thickets. A dead bird was picked up at Blue Creek on May 28.

Systematic status.—The three specimens taken were all in northbound migration. The one male is clearly of the race notabilis. The two females are small, well below the mean of this race in tail and wing length but more material is necessary before any decision can be reached on the occurrence of S. n. limnaeus McCabe and Miller in the park area.

*MACGILLIVRAY'S WARBLER Oporornis tolmiei (Townsend)

Seen on only one occasion, when, on August 8, 1943, alongside the Athabasca between Snaring and Henry House, a pair were feeding young just out of the nest.

MARYLAND YELLOW-THROAT Geothlypis trichas campicola Behle & Aldrich

A regular summer visitant to the bushy borders of ponds and streams at lower elevations. Spreadborough saw two on July 23, 1917; another was singing near Swiftwater Creek on June 22, 1930. In 1944 it reached Willow Creek on May 22 and it was seen along the Athabasca six times between June 5 and 30. One seen at Talbot Lake on September 22, 1945 by Dr. Lewis provides the latest autumn record. One specimen taken.

BLACK-CAPPED WARBLER Wilsonia pusilla pileolata (Pallas)

From May 28, 1944, when the species first reached the Blue Creek area, it was found to be a characteristic inhabitant of the timber-line clumps of prostrate spruce and balsam. It was less common in the streamside thickets of the Athabasca Valley but was seen in this habitat five times during June. Apparently nesting at Mount Edith Cavell, Poboktan Pass, Brazeau Lake, Cairn Pass, Southesk Pass, and near Jacques Lake during July, 1944.

Riley notes that in 1911 the last one of the season was seen on September 17.

AMERICAN REDSTART Setophaga ruticilla (Linnaeus)

The redstart is an uncommon summer visitant, chiefly to the Athabasca Valley, and occurs elsewhere and in larger numbers during migration.

In 1944 first migrants reached Willow Creek on May 23 and several were seen during the subsequent two weeks. In the Athabasca Valley four were seen on June 5 and one on June 28.

Spreadborough took several specimens in the summers of 1918 and 1919, and Riley notes one seen at Henry House on September 16, 1911.

HOUSE SPARROW Passer domesticus domesticus (Linnaeus)

Firmly established in Jasper village and occurring sporadically in other parts of the park. On August 2, 1930, a specimen was taken at Snaring; in 1941 one was seen at Devona, and on May 24, 1944, a pair appeared at Willow Creek.

YELLOW-HEADED BLACKBIRD Xanthocephalus xanthocephalus (Bonaparte)

On June 16, 1917, Spreadborough collected a specimen in the park. In May, 1945, a yearling male was taken at Willow Creek by J. Hatter.

RED-WINGED BLACKBIRD Agelaius phoeniceus arctolegus Oberholser

Loring found this bird common at Henry House in July, 1896. In 1944 it was nowhere common, but a small population occupied several swampy areas along the Miette and Athabasca Valleys, as well as at Willow Creek and Blue Creek and along the Brazeau River east of the Brazeau Lake cabin.

Breeding.-Several pairs were feeding nestlings at a small beaver pond 10 miles west of Jasper on June 30, 1944.

RUSTY BLACKBIRD Euphagus carolinus (Müller)

First reported for Jasper by Taverner, who collected two on July 28, 1917. During the recent field work a colony of some six pairs was found occupying some drowned spruce and swampland at Snake Indian Lake and another small colony by a beaver pond on Buffalo Prairie. Transient birds were seen at Willow Creek on May 20 and 23; in the Athabasca Valley on June 23; and again in the same area on September 21, 1945, the last by Dr. Lewis.

Breeding.-A pair was watched feeding young at Miette Cabin on June 28, 1946.

BREWER'S BLACKBIRD Euphagus cyanocephalus (Wagler)

There is a sight record for Jasper House recorded by Riley on July 5, 1911, and another for Jasper on July 25, 1917, by Spreadborough. The latter took one specimen in the park on August 27, 1918.

BRONZED GRACKLE Quiscalus quiscula versicolor Vieillot

An adult male taken at Willow Creek on May 25, 1944, is the only record for the park.

COWBIRD Molothrus ater artemisiae Grinnell

This is apparently a long-standing inhabitant of the park, as Loring found it common at Henry House in 1898 and Spreadborough took specimens in 1918. In 1917 he reports seeing just two.

It has a wide habitat tolerance and was found at elevations of from 7,000 feet on Poboktan Pass to 3,400 feet in the Athabasca Valley. At Jasper it was abundant in 1943 and 1944, where 10 or 12 birds were usually to be seen around the corral.

Breeding.-On August 4, 1930, at Prairie Creek, a juvenile was being fed by a pair of juncos.

WESTERN Tanager Piranga ludoviciana (Wilson)

This species was found only in the Athabasca and Lower Snake Indian Valleys, where it was widespread but not abundant. Loring in 1896 and Spreadborough in 1917-19 found about the same distribution and status.

Breeding.-On June 26, 1944, a male was feeding nestling young.

LAZULI BUNTING Passerina amoena (Say)

In June and July, 1918, Spreadborough collected four specimens in the park.

EVENING GROSBEAK Hesperiphona vespertina (Cooper)

Bonaparte described specimens from this region but the subspecies represented has not been determined.

HOUSE FINCH Carpodacus mexicanus smithi Figgins

An adult male taken on May 30, 1944, at Topaz Shelter is the only record of this species in the park, the first record for Alberta, and the northernmost occurrence for the species. This specimen has been examined by Dr. A.H. Miller of the Museum of Vertebrate Zoology, University of California, who identified it as C. m. smithi.

COMMON PURPLE FINCH Carpodacus purpureus purpureus (Gmelin)

The scarcity of records of this species in the park lead to the conclusion that it was uncommon in earlier days. There are two specimen records made by Spreadborough on June 21, 1918, and in 1919, but no other evidence of the species until recently. In 1944 it was seen at several points during the summer. Pairs or single birds were noted at Athabasca Falls, Devona, Decoigne, and Willow Creek in May; at seven different places along the Athabasca Valley in June; and along the Rocky on June 21. In 1945 an adult male was collected at Maligne Lake on May 10.

Breeding.--Young out of the nest were seen in Jasper on June 28.

PINE GROSBEEK Pinicola enucleator montana Ridgway

The records of Spreadborough (Macoun), who on August 29, 1898, saw two grosbeaks at Miette River, and of Loring (Preble), who noted several between Jasper House and the Smoky River in the summer of 1896, indicate that this species did occupy the park as a summer visitant.

Neither in 1943 nor in 1944 were any seen and recent records are of birds seen in March and April, 1941, when it was common in all parts of the park and a single red-plumaged male seen near the head of Caledonia Creek on June 27, 1946.

There is one specimen record, June 24, 1919, made by Spreadborough.

COMMON ROSY FINCH Leucosticte tephrocotis tephrocotis (Swainson)

Abundant on the alpland areas wherever alpine meadows adjoin broken rock cliffs.

Breeding.--Bob-tailed young were seen in Poboktan Pass, July 28, 1943; at the head of Restless River on July 17, 1944; and near Topaz Shelter on August 17, 1943.

*ARCTIC REDPOLL Acanthis hornemanni exilipes (Coues)

On April 2 and 3, 1941, there occurred favourable opportunity of observing flocks of redpolls at Blue Creek. One-third were judged to be of this species but no specimens were taken.

*REDPOLL Acanthis flammea flammea (Linnaeus)

This is sometimes an abundant migrant in the park and a small number remain through the winter. Between October 12 and

20, 1896, Loring found it in large flocks in the mountains west of Henry House but it was not reported again until seen at Jasper in early March and at Blue Creek on April 2 and 3, 1941. One small flock was seen at Devona on December 18, 1944.

PINE SISKIN Spinus pinus pinus (Wilson)

An abundant and widespread summer visitant. First seen in 1944 on May 3. It occurs from timber-line to the lowest elevations and was noted in every part of the park visited.

RED CROSSBILL Loxia curvirostra Linnaeus

This characteristic inhabitant of the conifer forest is as erratic in occurrence here as it is elsewhere. Between July 23 and August 11, 1917, Spreadborough found it abundant. In 1943, on the other hand, it was scarce and seen but twice, at Brazeau Lake and Shalebanks, for a total of five birds. It was present in increased numbers in 1944, when it was recorded at Willow Creek, Blue Creek, and Jasper and was found to be abundant in the southeastern part of the park in July, when 180 were seen in small flocks. It remains through the winter.

Eight July and August specimens in the National Museum of Canada were identified by Griscom as Loxia curvirostra sitkensis Grinnell.

WHITE-WINGED CROSSBILL Loxia leucoptera leucoptera Gmelin

Existing evidence indicates that this species is of sporadic occurrence in the area under study. Loring reported it common at Henry House on October 4, 1895, and took a specimen. In the early summer of both 1918 and 1919 Spreadborough took specimens. Between July 14 and 27, 1930, large flocks were constantly present in a grove of Douglas fir near Talbot Lake and specimens were taken. This species was identified at Rocky Pass and at Blue Creek in 1941, but not a single individual was seen in 1943 or 1944.

SAVANNAH SPARROW Passerculus sandwichensis anthinus Bonaparte

Early studies of the park area indicate this sparrow as abundant through the summer in the Athabasca Valley and up the Snake Indian.

It was scarce during the summers of 1943 to 1945. In 1944 it was a fairly common migrant, both in the main valley and at Willow Creek, and about 115 were noted during May. However, in June only one bird was seen in the Athabasca Valley and on the

circuit of the southern part of the park in July just four were seen, one each at Cairn Pass and Southesk Lake and a pair at Rocky Forks. In 1946 the savannah sparrow was an abundant summer resident around Talbot Lake and adjacent marshy areas.

Breeding.--A nest containing five eggs was found on Elysium Pass on June 26, 1946.

Systematic status.--The writer's material is inadequate to permit discussion of subspecific trends. The only breeding male is typical of anthinus. A spring migrant specimen from Talbot Lake, however, is closest to nevadensis in colour and size but shows approach to anthinus in certain features of colour.

LE CONTE'S SPARROW Passerherbulus caudacutus (Latham)

First seen and one specimen taken at Pocahontas on June 3, 1946. Seen again two days later on an island in the Athabasca River six miles north of Jasper.

VESPER SPARROW Poocetes gramineus confinis Baird

This sparrow is a fairly common summer visitant to the open dunes and meadows of the Athabasca Valley north of Jasper. First seen in 1944 on May 4, but may have been present for a few days previous to this.

SLATE-COLOURED JUNCO Junco hyemalis cismontanus Dwight

One of the most abundant birds in the park. Found in all areas and from near timber-line to the lowest elevations. Earliest arrivals in 1941 were seen at Devona on March 23 and at Blue Creek on April 1. The only winter record is that of one bird seen near the dairy barn at Jasper on December 20, 1944.

Breeding.--A nest found at Willow Creek on May 19, 1944, contained four eggs on or about May 28.

Bob-tailed young were seen on Old Fort Point on June 26 and frequently thereafter in the Athabasca Valley and the southern part of the park.

OREGON JUNCO Junco oreganus montanus Ridgway

Two brown-backed male juncos were seen by the trailside near Blue Creek on May 28, 1944, but as specimens were not taken this record should be made subject to confirmation. On September 20 and 22, 1945, Dr. Lewis saw three male juncos apparently of this species in the vicinity of Jasper townsite.

Miller (1941:410) lists Junco oreganus montanus Ridgway from Henry House, with the statement that this species and the last-named interbreed all through this region. Mated pairs taken along Miette River in 1946 confirm this.

CHIPPING SPARROW Spizella passerina arizonae Coues

A widely distributed summer visitant, seen everywhere along the trails in 1943 and 1944. In August, 1943, along the Snake Indian Valley the migrant flocks of this sparrow numbered thousands of birds. The first northbound arrival was noted at Devona on April 17, 1943. The latest autumn record is that of two seen by Dr. Lewis at Jasper on September 22, 1945.

Breeding.--A nest containing four eggs was found at Rocky Forks on July 19, 1944, another at Miette on June 11, 1946.

Systematic status.--A series of nine June and July males in the National Museum of Canada are referred by Dr. A.L. Rand to the race S. p. arizonae Coues.

CLAY-COLOURED SPARROW Spizella pallida (Swainson)

This species was first recorded by Spreadborough, who took several specimens in July and August, 1918, and on July 21, 1919.

In 1944 it was first noted at Talbot Lake on June 15. At that time several males were on territory and courting was observed. The only record outside the lower Athabasca Valley area was of a pair seen on July 4, 1944, between Waterfalls Cabin and Poboktan Pass. This was the only instance in which the songs of all three species of the park's Spizellas were heard at the same time.

BREWER'S SPARROW Spizella breweri taverneri Swarth and Brooks.

A specimen taken in the Tonquin Valley on July 18, 1930, was the first record for the park. In 1943 and 1944 it was found to be widespread but nowhere abundant. It is an inhabitant of the alpine meadows and was not noted below timber-line.

Breeding.--On July 14, 1944, a nest with two eggs was found in a small balsam clump at timber-line on Cairn Pass and on June 25, 1946, a nest containing four eggs was found on Elysium Pass.

WHITE-CROWNED SPARROW Zonotrichia leucophrys gambelii (Nuttall)

An abundant summer visitant above and near timber-line, less common in the Athabasca and other valleys of lower elevation.

As this species is an early arrival in the spring (about May 1) it comes to the lower elevations first and later ascends to the timber-line country. It is accordingly abundant in the valleys during May but uncommon in June. The autumn migration is represented by counts totalling 285 birds made by Dr. Lewis at Jasper and vicinity, September 20 to 22, 1945.

Breeding.--A nest with four eggs was found at Sunwapta Pass on June 11, 1944, and another containing newly hatched young on Elysium Pass on June 26, 1946.

GOLDEN-CROWNED SPARROW Zonotrichia atricapilla (Gmelin)

This sparrow is a fairly common summer visitant to the alplands in all parts of the park. In 1944 the first spring arrivals reached Willow Creek on May 23.

Breeding.--In 1930 two nests were found in the stunted spruce near the head of Maccarib Creek on July 7. Both contained newly hatched young when found and both were destroyed by Columbian ground squirrels before the young were fledged. At Cairn Pass on August 4, 1943, a pair of adults were feeding bob-tailed young. On June 26, 1946, a nest with newly hatched young was found on Elysium Pass. The nest was built in a concavity in the ground beneath a clump of heather.

WHITE-THROATED SPARROW Zonotrichia albicollis (Gmelin)

The statement by Loring, quoted by Preble, that this species was breeding abundantly in the high mountains near Henry House in 1896 almost certainly refers to the white-crowned sparrow.

The white-throated sparrow is known in the park solely on the basis of migrating birds observed and specimens taken at Willow Creek on May 22, 1944, and at Talbot Lake on May 21, 1946. In all, 16 were seen at Willow Creek and six at Talbot Lake.

FOX SPARROW Passerella iliaca altivagans Riley

The fox sparrow is infrequently seen but was found in small numbers at timber-line, at least over the entire southern half of the park. There are specimens from the Tonquin, Mount Edith Cavell, Poboktan Pass (Cowan) and from the head of the Smoky (Riley). Migrant birds were seen at Pyramid Lake on April 22, 1943.

LINCOLN'S SPARROW Melsopiza lincolni (Audubon)

Taverner and Spreadborough found this bird common in 1917 and collected several specimens. In 1930 it was nesting,

both at timber-line in the Tonquin Valley and at Snaring Lake in the lower Athabasca Valley, and was present in fair numbers. However, in 1944, though it was a moderately common migrant in May and 49 individuals were noted without particular search for them at Snaring Lake, Willow Creek, Blue Creek and Topaz Shelter, few remained through the summer. The only one seen on the trip around the south boundary was at Brazeau Lake on July 10. In 1946 it was a common summer resident in all the marshy and swampy areas along the Athabasca and Miette Valleys.

SONG SPARROW Melospiza melodia inexpectata Riley

Apparently song sparrows have never been abundant in the park, probably because the area of suitable habitat is small.

At present there are small populations in the thickets bordering parts of Talbot Lake and in a similar habitat adjacent to a beaver pond bordering the Devona fire road. Along the Miette Valley there is a somewhat larger population.

Breeding.-Young just out of the nest were seen near Geikie on June 30, 1944.

LAPLAND LONGSPUR Calcarius lapponicus alascensis Ridgway

Spreadborough collected a specimen on August 31, 1917, at 8,000 feet altitude, near Mount Edith Cavell and the writer took another at Amethyst Lake on September 5, 1946. Dr. Lewis counted 415 in and around Jasper on September 21 and 22, 1945.

SNOW BUNTING Plectrophenax nivalis nivalis (Linnaeus)

Several flocks of snow buntings were seen near Jasper early in March, 1941.

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Fig. 2. Aspen Parkland type, Jasper, Alberta.



Fig. 3. Open Douglas fir forest, Parklands Biotic area. Buffalo Prairie.



Fig. 4. Henry House Flats. Parklands Biotic area.



Fig. 5. Old beaver meadow on Miette River.



Fig. 6. Talus on Signal Mountain. Habitat of rock wren.

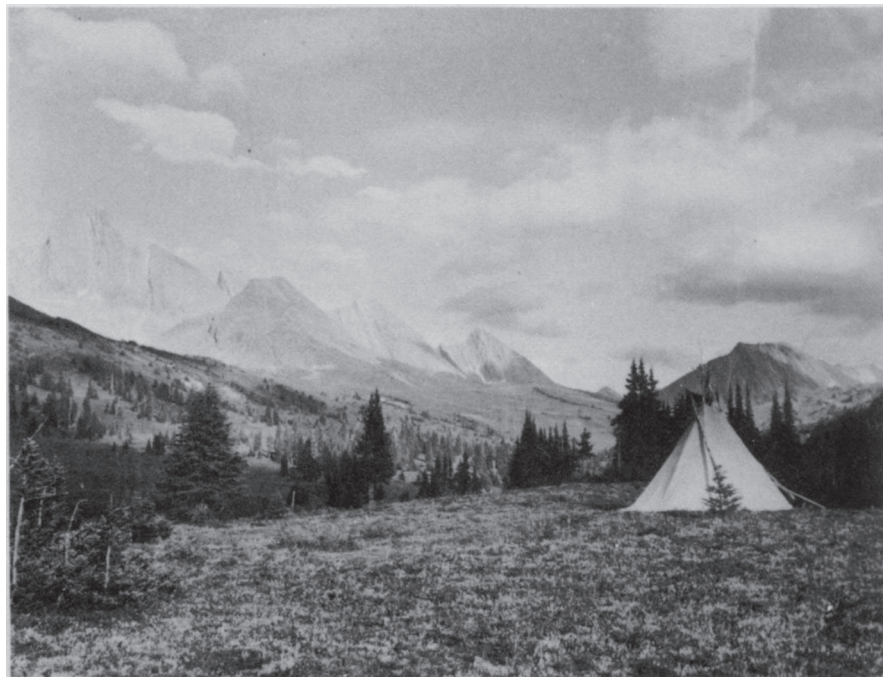


Fig. 7. Alpine meadow at head of north fork of Southesk River.

CANADA

NATIONAL PARKS BRANCH
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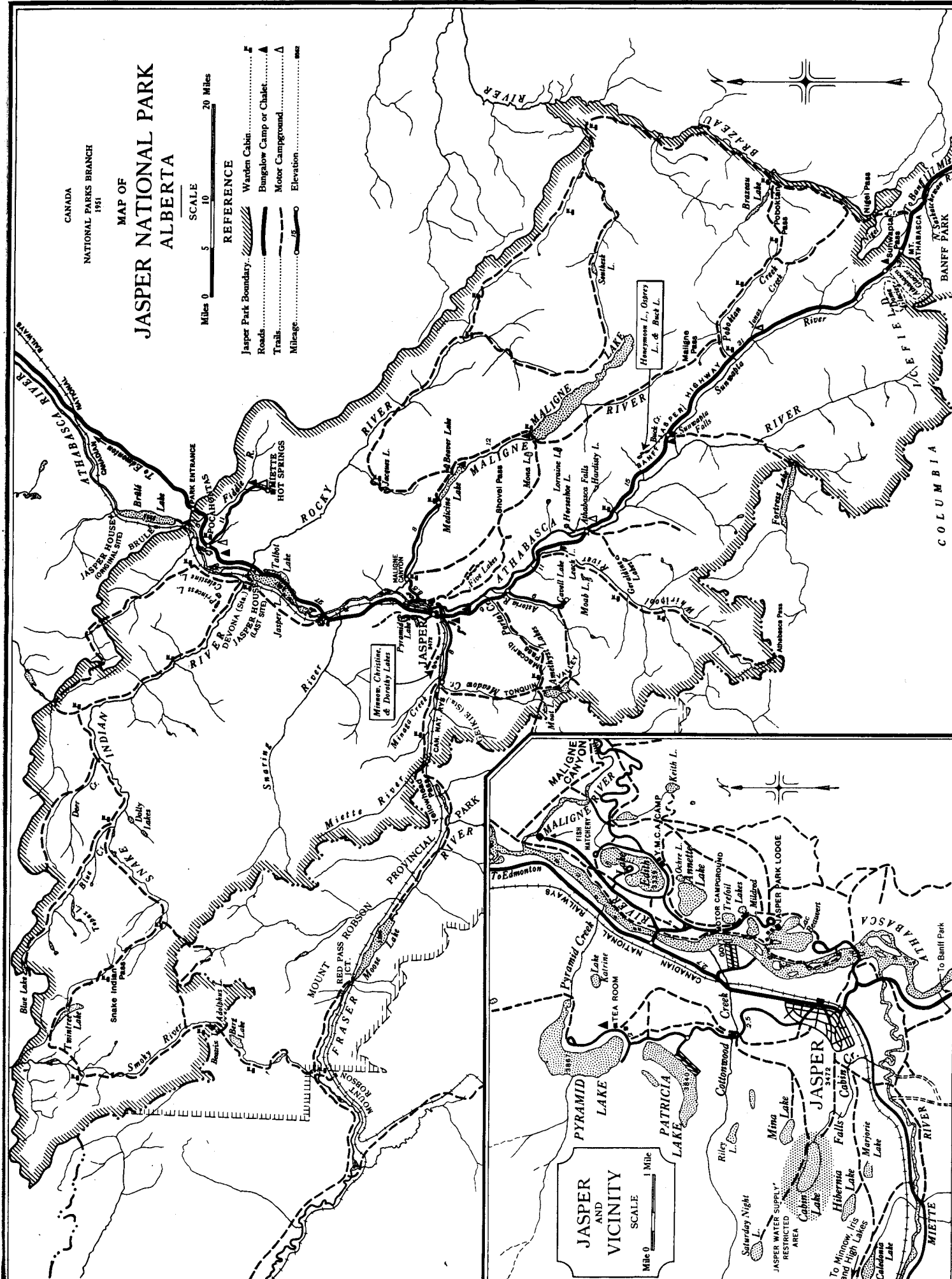
MAP OF

JASPER NATIONAL PARK ALBERTA

SCALE
Miles 0 5 10 20 Miles

REFERENCE

- Jasper Park Boundary.
- Roads.
- Trails.
- Mileage.
- Warden Cabin.
- Bungalow Camp or Chalet.
- Motor Campground.
- Elevation.



JASPER AND VICINITY

SCALE
Mile 0 1 Mile

